GRENADA

REPORT

ON THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1957.

GRENADA.

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STAFF OF THE DEPARTMENT OF AGRICULTURE, GRENADA, 1957.

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W. O'Brien Donovan, Dip., Agric., (O.A.C.) ..	Agricultural Officer (Ag.)
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A. Gittens	„ Assistant.
R. Pierre	„ Assistant.
E. Payne, B.S.A.	Cane Farming Officer to August 31st. Land Use Officer from 1st Sept.
A. C. Branch	Senior Agricultural Asst., Carriacou.
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E. S. Holgate	Banana Officer.
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Samuel Daniel	Forest Guard (North)
Norris Bain	Forest Guard
L. Laldee	Forest Guard.
V. Honore	Forest Guard (South).
A. Alexander	Forest Guard (South).
D. Marrast	Forest Guard Driver.
S. Daniel	Forest Guard.
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E. J. Peters	Land Settlement Ranger.
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C. Welsh	„ „ „
O. John	Foreman, Botanic Gardens.
C. Marshall	Messenger.

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Mrs. U. Aird	Lady Clerk Class III.
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COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Development of Small Scale Agriculture.

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N. Knight	„
J. Carter	„

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Cocoa Industry Improvement.

D. A. Perryman, D.I.C.T.A.	Agricultural Officer (Cocoa).
A. Cruickshank, D.I.C.T.A.	Agricultural Assistant.
G. L. Oglivie	Senior Agricultural Instructor.
B. Pitt	Junior Agricultural Instructor.
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I. Ferreira	„ „
N. D. Nedd	„ „
J. Marshall	Foreman Maran Cocoa Station.
R. Mark	Foreman Boulogne Cocoa Station.
R. Lett	Propagator Attendant.
D. Fletcher	„ „
J. Telesford	„ „
E. N. Barriteau	Clerical Assistant.
K. J. Nedd	„ „

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Improvement of Land Settlement.

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A. Hinds	Junior Agricultural Insturctor.

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Fisheries Improvement.

C. Grubbe	Fishery Officer.

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Agricultural Development, Carriacou.

A. C. Branch	Senior Agricultural Assistant.
M. John	Junior Agricultural Instructor.

Plant Disease and Pest Control.

D. K. Samuels	Control Officer.
J. A. Leid	Inspector.
L. Raeburn	,,
B. Hamilton	,,
S. Kent	,,
N. Creft	,,
C. Campbell	,,
Miss S. Lord	Clerical Assistant.

Report of the Department of Agriculture, Grenada, B.W.I., for the Year ending 31st December, 1957.

SECTION I.

AGRICULTURE IN THE COLONY.

Weather Conditions.

1. Rainfall was irregular, comparatively low and showers were of short duration. As a result of weather, there was a shortage in all agricultural crops and commodities.

Cocoa Industry.

2. Cocoa quality was consistently upheld and was characterized by two grades. Plantation grades produced by large estates and Estate grades by peasants and small holdings.
3. Prices rose from 12 cents to 15 cents for wet and 40 cents to 57 cents for dry cured.

TABLE I.

Export and Values of Cocoa.

Year.	*Export (Cwt)*	*Value ($)*
1951 ..	48,504	3,576,116
1952 ..	54,176	3,537,395
1953 ..	61,128	3,852,773
1954 ..	51,362	4,959,403
1955 ..	47,327	4,158,807
1956 ..	11,400	650,187
1957 ..	23,308	1,387,778

Nutmeg Industry.

5. Production was short. The effects of the 1955 hurricane are still in evidence.

TABLE II.

Nutmeg delivered to the G.C.N.A.

	1956	1957
Cured in shell	1,391,325	400,207
Uncured in shell	279,636	1,413,689
Cracked Grinders	12,278	15,845
Whole Mace ..	122,019	132,973
Broken Mace	19,143	21,882

6. Prices in the industry were very good. This was ensured by demand exceeding supply.
7. Advances to growers were $748,272.28.
8. Exports of nutmegs totalled 385,337 lbs. valued at $1,159,949.11 and mace valued at $614,930.89

TABLE III.

Quantities and Values of Exports of Nutmegs, Mace and Nutmeg Oil.

Year.	Nutmeg (Cwt)	Mace (Cwt)	Nutmeg Oil (lbs)	Total Value $
1951 ..	23,152	5,199	5,940	2,199,514
1952 ..	44,607	6,886	3,140	2,334,987
1953 ..	37,082	7,505	10,260	2,328,894
1954 ..	48,881	7,439	4,050	2,935,227
1955 ..	52,887	6,478	6,570	3,934,609
1956 ..	35,626	1,169	2,385	3,946,701
1957 ..	~~345~~ 3329	1,308	..	1,774,880

Lime Industry.

9. Exports of lime oil were 1,357 lbs. and lime juice were 19,460 gallons valued at $19,599.00. Major portions of lime oil went to the United Kingdom. The industry needs rehabilitating.

TABLE IV.

Quantities and Values of Lime Oil and Lime Juices (raw).

Year.	Lime Oil (lbs)	Lime Juice (gals)	Totalled Value ($)
1953 ..	6,193	83,280	94,591
1954 ..	10,270	1,600	64,600
1955 ..	3,631	23,480	33,488
1956 ..	460	33,520	10,786
1957 ..	1,357	19,460	19,599

Coconut Industry.

10. Neither coconuts nor copra were exported for the year.

11. During the year 3,000 boxes of laundry soap and 27,556 gallons of coconut oil were made locally for home consumption by the Tempe Soap Factory.

Banana Industry.

12. Interest continues in the production of bananas for export. Total quantity of local planting material purchased for distribution for the year was 110,564 plants.

13. Demonstration plots were maintained. At Mirebeau and Perseverance, plots were drained, pruned and fertilized.

14. Twelve Banana Marketing Co-operatives were in operation.

15. The estimated production of 500,000 stems for the year was exceeded by 68,000.

Cotton Industry.

16. Cotton production in Carriacou for the year was 361 bales, or 111,149 lbs. As customary the crop was disposed of in Liverpool, price per lb. 52 cents.

Sugar Industry.

17. A total of 27,019 tons of canes were grounded by the Grenada Sugar Factory for the 1957 crop. Sugar production was 2,665 tons. Tons cane per ton sugar worked out at 9.87.

18. Official rum production was 91,395 gallons proof rum.

MINOR AGRICULTURAL INDUSTRIES.

Livestock.

19. Poultry and game and livestock were exported at a value of $33,586.00.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

Botanic Gardens.

20. The following numbers of economic and ornamental plants were distributed :

Grafted Mangoes .. 246.
Ornamentals .. 646.

COCOA INDUSTRY IMPROVEMENT SCHEME.

Colonial Development and Welfare Scheme D. 612.

(Summary by B. J. G. Perryman, D.I.C.T.A. and A. M. Cruickshank, D.I.C.T.A.)

21. *Weather Conditions.*—The total annual precipitation of rain was well below the ten year average rainfall figures for all stations.

22. The monthly rainfall recorded for the period January to July compared favourably with the ten year means for these months. For the period August to December the monthly rainfall records were far below the ten year mean averages.

23. The low precipitation during the latter part of the year shall adversely affect the cocoa crop for the succeeding year.

24. The rainfall figures for the Cocoa Stations are attached to this report as Appendix I.

25. *Acquisition of new areas for Expansion.*—For the expansion of the scheme recommendations were forwarded to Government for the purchase of portions of Dunfermline and Mirabeau Estates respectively. Approval for these purchases were only obtained in 1957, and approximately 11½ acres of land at Dunfermline Estate and 77 acres of Mirabeau Estate were purchased in early 1957.

26. The area purchased at Dunfermline was earmarked for nursery expansion and also for the expansion of storage sheds. The 77 acres acquired at Mirabeau would be utilized for nursery expansion, the propagation of budded cocoa plants and other economic plants.

THE INVESTIGATIONAL PROGRAMME.

27. *General.*—The period under review marks yet another year in the continuation of the Investigational Programme of the Cocoa Industry Improvement Scheme. The recovery of the Clonal Trials at Ashenden and Mt. Horne Cocoa Stations has been gratifying, especially in terms of yield. The same, however, cannot be said of that at Maran where the unthrifty appearance of the trees due to several factors is indeed causing some concern. The negligible and sometimes negative response to treatments in the cultural and Manurial Trials is also regarded with a certain amount of diffidence. Consideration will therefore have to be given to the thought of reviewing the performance of all such experiments in the not too distant future.

28. Experiments conducted on estates by the scheme are progressing satisfactorily and it is expected that some results should be forthcoming in the coming year.

29. (*a*) *The Clonal Trials.*—These trials all attained their ninth year, having been planted in 1948. Generally speaking and with few exceptions, the clones have done better than in the previous year and it is anticipated that by the next crop year the pre-hurricane yields would have been surpassed.

30. The routine cultural operations carried out in all these trials during the year comprised weeding, regulation of shade, staking, pruning and clearing contour drains. At Maran, however, additional contour drains had be be dug.

31. The usual annual application of fertilizers was made on all three stations.

Mt. Horne.	Ashenden.	Maran.
12 : 8 : 24 N.P.K. Mixture —2 lbs. per tree.	12 : 8: 24 N.P.K. Mixture—2 lb. per tree.	12: 8: 24 N.P.K. Mixture—2 lb. per tree.

32. *Pests and Disease Control.*—There were no major outbreaks of pests or diseases and in fact, the incidence of beetle attack was surprisingly low. Minor attacks of thrips were controlled with Dieldrex and at Maran unsuccessful attempts were made to control Mealy Bugs and ants with mixtures of Malathion and Albolineum with a view to eleminate the "Black Blight" both on the Gliricidia shade and the Clonal cocoa.

33. There were few recorded instances of the occurrence of Witches' Broom.

34. (*b*) *The N.P.K. Manurial Trials.*—(3x2x2 partially confounded randomised blocks G.S. Clones 32, 76,33). The two such experiments at Maran and Mt. Horne were planted in 1949 and 1950. They therefore received their 8th and 7th Manurial applications respectively in August at the following rates.

	Sulphate of Ammonia			Triple Superphosphate		Sulphate of Potash	
	N 0	N 1	N 2	P 0	P 1	K 0	K 1
Maran	nil	$1\frac{2}{3}$ lb.	$3\frac{1}{3}$ lb.	nil	$1\frac{1}{4}$ lb.	nil	$1\frac{2}{3}$ lb.
Mt. Horne	nil	$1\frac{1}{3}$ lb.	$2\frac{2}{3}$ lb.	nil	1 lb.	nil	$1\frac{1}{3}$ lb.

35. The following routine operations were carried out as the necessity arose : weeding, pruning, shade regulation, staking and cleaning contour drains. Occasional attempts were made to control minor trip attacks in both experiments with Dieldrex.

36. The 1956-57 Crop Analysis of the Mt. Horne N.P.K. failed to reveal any significant difference between treatments. G.S. 76 however, performed significantly better than G.S. 32 and G.S. 33. There is no indication however, that this was a treatment response. At Maran the story was similar in that there were no treatment differences. There was, however, little to choose between G.S. 76 and G.S. 32 in performance, whilst G.S. 33 true to form, was poor.

37. It is being suggested that failure to obtain any consistent significant responses over the years might in part be due to the effect of the shade planted throughout these experiments. The shade in both experiments is fairly uniform except for Block 1B on a ridge at Mt. Horne, where it has always been a problem to get both the clonal plants and the shade established on the shallow soil. The damage to these experiments by the Hurricane made it imperative to re-establish the shade if only as a buffer against the unfavourable conditions. The recovery has been so rapid that during the 1958 rainy season, all the shade trees will be eliminated before the fertilizer treatments are applied, with a view to determine whether this factor was responsible for the negligible treatment responses.

38. (*c*) *Pen manure vs. its N.P.K. equivalent with extra Nitrogen trials.*—(2x2x2 partially confounded randomized blocks G.S. 76, 56, 32). The two such experiments were planted in 1950 at Mt. Horne and Asheden. They both received their fifth application in 1954 at the rate of 16 tons pen manure per acre with its N.P.K. equivalent and Extra Nitrogen. The next application which will be in 1958, would double that of 1954, e.g. 32 tons pen manure per acre with its N.P.K. equivalent and extra Nitrogen. This amount which represents the theoretical maximum which might be applied by an estate, will be repeated thereafter every four years.

39. Certain routine operations were carried out in both experiments during the year and these consisted mainly of weeding, pruning, shade regulation and cleaning contour drains.

40. Both experiments were occasionally sprayed with Dieldrex to control minor outbreaks of thrips.

41. The 1956-57 Yield Analysis of both trials failed to reveal any treatment differences though at Mt. Horne G.S. 76 performed relatively better than either G.S. 56 or G.S. 32. At Ashenden, however, all the clones were equally poor performers.

42. The same arguments might be advanced with regards to the effect of shade on the treatment responses as was the case in the N.P.K. Fertilizer experiments. There are, however, certain modifications in that the last treatment application was made in 1954 and then there were the effects of the Hurricane of 1955 to be taken into account, when a considerable amount of leaching of nutrients must have taken place. In addition, there are certain plots in the Ashenden trial, where both the clonal plants and the shade have remained consistently poor.

43. Nevertheless, the shade will be drastically reduced or eliminated in these experiments in 1958 prior to the manurial application.

44. (*d*) *Forking, Mulching and Forking-in-Mulch Trials.*—(4x2x2 Randomised Blocks, G.S. 56, 73, 32, 5, at Mt. Horne and G.S. 11, 29, 36, 32 at Carriere Estate). The experiment at Carriere replaced a similar one abandoned at Ashenden Cocoa Station, three new clones were however, introduced in this Trial.

45. *Mt. Horne.*—The sixth mulch application was made in April to the experiment on this station. This consisted of a mixture of elephant and Guatemala grasses applied to each "M" and "MF" plots at the rate of 1,000 lbs. In July, when decomposition of the mulch was fairly advanced the "F" and "M.F." plots were forked. The seventh application was made in August and the type and rates were the same as the sixth. Two consecutive applications are regarded as a complete treatment since the recommended rates are 2,000 lbs. green mulch per annum to each "M" and "MF" plots. It is extremely difficult to incorporate 2,000 lbs green mulch into the soil in a"MF" plot. To compromise therefore, it was decided since 1953 to split the applications in half, but since this would involve forking after each application it was further decided to fork only after one application. This as previously mentioned, was done in July to the "F" and "MF" plots.

46. Other routine practices carried out in this experiment were weeding, pruning, regulating shade and clearing contour drains. Minor attacks of thrips were controlled with Dieldrex Insecticide.

47. The 1956-57 Crop year analysis indicated a slight clonal response to mulching, particularly G.S.5.

48. *Carriere Estate.*—The second and third mulch application was made to the experiment on this estate in April and November. The rates and type of mulch were the same as at Mt. Horne but forking the "F" and "MF" plots was done in September.

49. The recovery of the trees has been extremely good and most of the trees are fruiting. It has therefore been decided to analyse the 1957-58 Crop Year results.

50. Routine maintenance work consisted of pruning, relabelling, staking and regulating shade. There were several attacks of thrips, beetles, mealy bugs (and the associated black blight). Frequent applications of Dieldrex reduced the incidence of thrips and beetles, but mixtures of Malathion and Albolineum seem to have had little effect against the mealy bugs.

51. (*e*) *Liming and Manurial Trial.*—(2x2x2x2 factorial, planted in 1954 at Hope Estate). One of the objects of this experiment is to lend confidence and stability to the practice of liming in Grenada. The first application of burnt lime was applied in October at the rate of 10 lbs. per tree. The N.P and K treatments will be applied at the beginning of the rains in 1958. The performance of the clones ICS 40 and 39 and G.S. 36 has been exceedingly good and the 1957-58 Crop Year yields will be analysed.

52. Routine maintenance work consisted of weeding and pruning. Minor attacks of thrips were controlled with Dieldrex insecticide.

53. (*f*) *Estate Clonal Trials.*—The five experiments are all doing well and the recovery of the trees has been satisfactory. Yield records are being kept and the 1957-58 yields will be analysed. These experiments are situated as follows :—Two at Carriere Estate and one each at Grand Bras, Hope and LaTaste Estates.

Plant Propagation.

54. A drive was made to increase nursery areas and new nursery plantings were laid down at Dunfermline and at Mirabeau on lands acquired in the early part of the year.

55. *Production of Rooted Cocoa Cuttings.*—The table in appendix II, shows detailed statistics from which the propagating efficiency of the cocoa stations have been computed.

56. The Propagating Efficiency for all stations dropped from 59% in 1956 to 48%, but there was an increase in plant production of some 34,800 rooted cocoa cuttings.

57. The following table shows the Rooting Efficiency of the different methods of propagation on the three stations :—

	Boulogne-Mt. Horne %	Ashenden %	Maran %
Closed Bins :			
Stem Cuttings ..	56	52	63
Single Leaf Cuttings	56	62	57
Core Method ..	59	—	—
Open Spray Beds :			
Stem Cuttings ..	—	39	—
Humidifier :			
Steam Cuttings ..	53	—	—

58. *Estate Propagators.*—During the year assistance on a limited scale was given to the propagators on the following estates, Carriere, Gouyave, Brothers, Dougaldston, Laura, LaSagesse,

Nianganfoix, Annandale and Bonair. A total of 13,360 rooted cocoa cuttings were produced by these propagators.

59. It was not possible to operate these estate propagators continuously due to a shortage of nursery material for propagation.

60. Nurseries have, however, been laid down on most of these estates so that material shall be available in the future for the more efficient operation of these propagators.

61. *Production of Budded Plants.*—Budding trials on a larger scale than the previous year were carreid out at Mirabeau. In the preliminary trials in 1956, it was discovered that a large number of plants died after they had been lifted from the beds and potted in the potting baskets. Most of these plants were lifted after the scion had developed 8 feet to 24 feet in height.

62. It was discovered that if the budded plants were lifted soon after the hardening-off of the first scion flush, the losses in lifting the plants were greatly reduced. This method of lifting was adopted.

63. The following table shows the number of stocks budded, the number of buds taken and the per cent takes, and the number of budded plants lifted from the total number budded.

	No.	%
Stocks Budded ..	31,747	..
Buds taken	25,711	81
Budded Plants Potted ..	22,680	71

64. It is not possible at this stage to determine the propagating efficiency of this method of propagation, as it is impossible to determine the number of budded plants that shall be lost during storage before they have been planted in the field.

Plant Distribution.

65. The following table shows the number of plants distributed during the year ; comparative total figures are given for 1956.

	Nurseries	Supplies or Replacements	Originals		Total Number Distributed
			Number	Acreage Equivalent	
Boulogne ..	6,079	3,189	138,801	319	148,069
Ashenden ..	4,294	6,099	51,240	118	61,633
Maran ..	5,392	..	33,131	76	38,523
Estate Propagators ..	...	..	7,662	18	7,662
Totals 1957 ..	15,765	9,288	230,834	531	255,887
Totals 1956 ...	11,033	124,174	2,764	6	137,971

66. The total number of plants distributed exceeded the estimate of 220,000 by 35,887.

67. It is estimated that 250,000 rooted cocoa cuttings shall be available for distribution in 1958.

68. A total of 1,400 budded cocoa seedlings were distributed to growers during the year.

69. It is not possible at this stage to estimate the production of budded cocoa seedlings for distribution in 1958, but every effort shall be made to increase the distribution of this form of planting material.

70. To the end of 1954, a total of 1,114 acres of clonal cocoa were planted throughout the island. In 1955, 1956 and 1957, 169 acres, 6 acres and 531 acres respectively were planted, increasing the total area planted with clonal cocoa to 1,820 acres. It has not been possible to assess the total acreage of clonal cocoa destroyed by the hurricane of September 1955, but the actual total acreage of clonal cocoa in the island is less than 1,820 acres.

Application for Rooted Cocoa Cuttings for Planting in 1957.

71. A total of 1,083 applications were received from farmers for 1,569,803 rooted cocoa cuttings, the equivalent of 5,232 acres at a planting distance of 12 x 12 for planting in 1958. This far exceeds the estimated production of both rooted cocoa cuttings and budded seedlings. Applicants' requests were, therefore, reduced on a pro rata basis.

Introduction of Clonal and Other Materials.

72. The following clones were introduced from the Department of Agriculture, St. Vincent, during the year :—

IMC 67, UF 221, UF 668, CC 4, ICS 89, SP 1, SCA 6, SCA 12, UF 677, UF 650, UF 667, UF 854 and CC 1.

73. Hybrid seeds of crosses of SCA 6 x ICS 1 and ICS 1 x SCA 6 were introduced from the Imperial College of Tropical Agriculture, Trinidad.

74. A small observational plot of these hybrid seedlings were laid down on the Mt. Horne Estate adjoining the Mt. Horne Cocoa Station.

Hybrid Seed Garden.

75. A small hybrid seed garden was laid down in an isolated area at the Mirabeau Agricultural Station consisting of 32 SCA 6s and 13 SCA 12s planted through rows of ICS 6 and ICS 12.

Building, Roads, Etc.

76. At the Mirabeau Station the following Arcon buildings were erected :—A storage shed to be used as a garage, work shop and storeroom, an office building, a dwelling house for the Foreman of the station and a watchman's house.

77. The overhead shade of the propagators and existing storage sheds at the Maran Station was replaced with Saran nets supported on piping uprights.

78. A cattle pen was also erected out of locally purchased materials to accommodate about twenty animals.

79. *Storage sheds for storing plants.*—The storage sheds at Maran and Boulogne were extended. All new sheds were constructed of piping uprights and covered with saran nets.

80. *Water Supply.*—With the co-operation of the Public Works Department the overflow from the reservoir of the water works at Mirabeau was conveyed over a distance of two miles in a four-inch pipe to the new Mirabeau station. An internal supply covering approximately two-thirds of the station was laid down for irrigation purposes.

The Cocoa Rehabilitation Board.

81. Government reconstituted the Cocoa Rehabilitation Board during the year, members of the newly reconstituted Board are as follows :—

The Superintendent of Agriculture, Chairman,
The Cocoa Agronomist,
Mr. J. B. Renwick C.B.E.,
Mr. C. Rush,
Mr. S. L. Alexander,
Mr. Herbert Neckles, J.P.,
Mr. W. A. Branch, J.P.,
The Agricultural Officer, Secretary.

82. During the year one meeting was convened. The main business dealt with was the estimates of expenditure and revenue for the year 1958, and the purchase of a crawler tractor and ancillary equipment.

Visits to and From other Areas.

83. Dr. Saunders, Professor of Entomology of the University of Saskatchewan who was at the Imperial College of Tropical Agriculture visited the island in July to study the pollinating agents of the cocoa flower.

Staff Notes.

84. Mr. D. A. Perryman was appointed Cocoa Agronomist with effect from the 1st of January, 1956.

85. Mr. A. M. Cruickshank was promoted to the post of Agricultural Officer with effect from the 1st January, 1956.

86. Mr. N. D. Nedd successfully completed his course at the Eastern Caribbean Institute and was promoted to the post of Agricultural Assistant with effect from 11th July, 1957.

87. Mr. I. Ferreira was appointed as Senior Field Assistant in charge of the Mirabeau Station with effect from 1st September, 1957.

88. Mr. B. A. Pitt who is attending a two year course at the Eastern Caribbean Institute was appointed Senior Agricultural Instructor with effect from 11th July, 1957.

89. Mr. D. Fletcher, Foreman of the Boulogne Propagation Station was promoted to the post of Field Assistant with effect from 1st January, 1957.

90. Mr. K. J. Nedd, Class III clerk was promoted to a Class II clerk with effect from 1st January, 1957.

91. Mr. R. Bubb was appointed Assistant Clerk with effect from 1st January, 1957.

92. Mr. N. S Taylor was appointed Class III clerk with effect from 1st March, 1957.

93. Mr. R. J. Edwards was appointed Assistant Clerk with effect from 1st July, 1957.

Staff Members.

Mr.D. A. Perryman, D.I.C.T.A., Cocoa Agronomist,
„ A. M. Cruickshank, D.I.C.T.A., Agricultural Officer,
„ N. D. Nedd, Agricultural Assistant, Officer-in-Charge Maran Cocoa Station,(
„ B. A. Pitt, Senior Agricultural Instructor, Officer-in-Charge Ashenden Cocoa Station,
„ R. F. Edwards, Senior Agricultural Insturctor, Acting Officer in Charge, Ashenden Cocoa Station,
„ I. Ferreira, Senior Field Assistant, Officer-in-Charge Mirabeau Station,
„ D. Fletcher, Field Assistant, Officer-in-Charge Boulogne Propagation Station,
„ R. L. Benjamin, Field Assistant,
„ J. Marshall, Foreman, Maran Cocoa Station,
„ R. Honore, Foreman, Ashenden Cocoa Station.

Clerical Staff.

Mr. E. N. Barriteau,
„ K. J. Nedd,
„ F. M. Thomas,
„ N. S. Taylor,
„ R. Edwards,
„ R. Bubb.

APPENDIX I

Rainfall Figures.

Cocoa Stations.

Station.		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Boulogne ..	1957	5.56	4.53	1.36	6.34	2.43	6.36	7.82	6.15	4.21	7.90	8.98	3.77
	10 Year mean	5.44	5.29	2.87	3.01	4.32	7.62	7.62	8.66	7.88	9.46	13.76	10.13
Ashenden ..	1957	8.97	5.68	1.50	9.40	4.75	9.20	9.58	8.61	8.33	6.57	9.57	7.34
	10 Year mean	8.13	8.54	4.48	4.53	5.07	9.69	10.43	10.54	10.26	11.20	14.68	11.88
Maran ..	1957	10.35	5.37	2.32	6.48	3.66	7.69	11.76	3.15	10.31	6.60	12.69	6.34
	10 Year mean	7.17	8.21	3.78	3.54	5.45	10.63	12.33	11.63	12.33	10.85	15.09	10.11
* Mt. Horne ..	1957	6.13	5.27	1.82	8.19	4.74	8.86	10.08	6.87	6.01	8.31	9.63	5.02
	5 Year mean	8.49	5.21	2.70	3.80	4.86	6.76	8.10	8.10	10.20	9.82	18.13	7.57

Annual Rainfall Figures.

Station.		1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	10 Year mean.
Boulogne ..	..	77.78	85.45	106.37	106.92	74.98	87.20	87.37	88.67	80.35	65.41	86.06
Ashenden ..	..	103.75	90.24	128.02	112.06	84.56	121.21	133.25	124.73	106.81	89.50	109.43
Maran ..	..	106.20	95.64	120.52	143.47	88.82	106.86	119.77	124.83	118.25	86.72	111.12
Mt. Horne ..	..	—	—	—	—	—	96.02	101.31	96.97	95.94	80.93	93.74 (5 Yr.)

* Recording commenced January 1953.

APPENDIX II.

Table showing both the Rooting and Propagating efficiency of the propagators on the three cocoa stations, as well as other statistics from which these indices have been computed.

	Boulogne	Ashenden	Maran	Cumulative Totals 1957	Cumulative Totals 1956
(*a*) Number of cuttings set	254,176	121,253	87,959	463,388	363,719
(*b*) Nnmber of cuttings rooted and placed on storage floors	142,500	63,882	55,201	261,583	230,051
Rooting efficiency	56%	53%	63%	56%	63%
(*c*) Number of plants produced during year	145,664	63,882	49,661	259,207	224,390
(*d*) Number of plants in storage on 1. 1. 57	91,263	34,905	21,986	148,154	173,563
(*e*) Total number of plants in storage during the year	236,927	98,787	71,647	407,361	397,953
(*f*) Total number of plants that died during the year in storage ..	33,021	9,768	15,441	58,230	22,249
(*g*) Per cent of deaths	14	10	21	14	6
(*h*) Per cent of survivals	86	90	70	86	94
(*i*) Number of plants that would have been distributed from the number of cuttings set	122,550	57,493	38,640	224,961	216,248
(*j*) Propagating efficiency	48%	47%	44%	48%	59%

HIGH LEVEL AGRICULTURAL STATION (NURSERIES SCHEMES).

General.

(By D. A. Perryman, Cocoa Agronomist and A. M. Cruickshank, Agricultural Officer.)

94. It was essential to make provision for the large scale production of economic crops other than cocoa to carry out efficiently the general rehabilitation agricultural programme of the island as a result of the devastation caused by the hurricane of September, 1955.

95. To achieve this objective it was essential to purchase an area suitable for nursery work with an adequate water supply.

96. After several sites had been inspected it was decided to purchase 77 acres of Mirabeau Estate. Funds were made available from the Hurricane Rehabilitation Funds, Cocoa Cess Account, for the purchase of the area.

97. Part of the area shall be utilized for the propagation of budded cocoa seedlings, cocoa nurseries and hybrid cocoa seedlings. The other part shall be occupied with nurseries for the propagation of other economic crops.

98. The recommendation for the purchase of this area which was put up to Government in 1956 was only finalised in February 1957. To avoid any further delays in the implementation of the scheme, nursery beds of citrus and coconuts were prepared at the Boulogne Cocoa Propagation Station in December 1956, and January 1957.

Clearing and Preparation of Land.

99. Work commenced on the station in February and most of the clearing was done by hand. Later in the year, when it was possible to hire a crawler tractor with bulldozing blade, clearing of the immediate area required was completed by this means.

100. Where it was possible ploughing and harrowing with implements drawn by a wheeled tractor was carried out; further tillage was carried out with a Gem Rotavator and the final tilth of nursery beds completed by hand.

Propagation of Plants.

101. *Citrus.*—Citrus seed beds were prepared and sown at the Boulogne Cocoa Propagation Station and the following stocks lifted, transported and planted in budding beds at the Mirabeau Station :—

Seville Sweet Orange	.. ..	32,722
Sour Orange	.. ..	61,099
Rough Lemon	.. ..	2,048

102. The following citrus buds were inserted into the above stocks during the year :—

Parson Brown Orange ..	1,629
Pineapple Orange	2,059
King Orange	2,461
Valencia Orange	7,940
Lambsummer Orange	2,449
Washington Naval Orange ..	2,143
Suprise Naval Orange ..	571
Bergamot	233
Thompson Pink Grapefruit ..	2,010
Duncan Grapefruit	380
Marsh Seedless Grapefruit ..	3,373
Ugli Fruit	648
Thornton Tangelo	292
Villa Franca Lemons	1,337
Ortanique Orange	45
West Indian Limes	10,629

103. Budwood of varieties which were not available locally was imported from Jamaica.

104. From observations the percentage takes are good and an average of 80% of the buds inserted were successful.

105. A limited number of budded plants, 521 were distributed late in the year.

106. Most of the lime plants budded shall be made available to Carriacou in 1958.

107. It is estimated that there shall be available for distribution in 1958 a total of 100,000 citrus budded plants.

108. *Pineapples.*—140,650 pineapples plants were imported from Jamaica. Most of the plants were of the Red Spanish variety.

109. A demonstration plot of approximately one acre containing some 15,900 plants was laid down at the Mirabeau Station. The other pineapple plants received were distributed to growers on a sucker for a sucker basis.

110. *Coffee.*—In the early part of the year 400 pounds of Robusta Coffee "cherry" was imported from Trinidad. The seed was pulped by hand and planted in seed beds at Boulogne and the Seedlings were lifted and transferred to Mirabeau at a later stage. During the year 53,300 bare rooted Robusta Coffee plants were distributed to growers.

111. *Coconuts.*—Selected seed nuts of both the 'tall' and 'dwarf' varieties were imported from St. Lucia and St. Vincent during the year. The seednuts were germinated at Boulogne and the Mirabeau Station. A total of 37,900 'tall' coconut plants and 9,160 'dwarf' plants were distributed during the year.

112. *Mangoes.*—Seedling stocks were planted in budding beds. The greater portion of these plants shall be budded and distributed in 1958.

113. *Avocado Pears.*—Seed was sown which shall be budded with local good varieties and also imported varieties. These plants shall be available for distribution in 1958.

114. *Miscellaneous Fruit Trees.*—During the year a limited supply of Ackee and Breadnuts were propagated for distribution in 1958.

Nutmeg Investigation.

115. Investigation into the vegetative propagation of nutmegs was vigorously pursued during the period under review. This was thought necessary as nearly eighty percent of the nutmeg cultivation in Grenada was destroyed by the 1955 hurricane. There was also need for some rapid and definite method of plant propagation to rehabilitate damaged plantations and holdings, and to replace the age old custom of establishing fields by seedlings with its obvious uncertainty of the sex to be and the unpredictable variation in yields.

116. Two methods of vegetative propagation were investigated viz :—

(1) *Stem Cuttings.*—Assuming the basic requirements for the propagation of nutmegs stem cuttings were the same as for cacao, semi-hardened nutmeg cuttings were treated with different hormone preparations and set in three rooting media—sawdust, Peat Moss, and coconut fibre dust. The results were very disappointing even though the experiment was repeated in washed sea sand. Most of the cuttings died before callussing, except in the peat moss medium which at the time, did show some promise. It was thought necessary to further repeat this experiment in two media—coconut fibre dust and Peat moss, and of sixty cuttings set in each media, twenty-seven produced callus knobs and two rooted in the coconut fibre dust, and twenty only callused in the Peat moss, after a period of seven weeks.

117. All the cuttings which callused or rooted were given a second hormone treatment and transferred to cored baskets in a 1 : 1 mixture of sea sand and fibre dust and then placed in hardening bins.

118. There is no doubt that this method has certain possibilities, but preliminary consideration must be given to the rooting period of cuttings and their rate of development when planted. A certain amount of work has been done at the Imperial College of Tropical Agriculture along these lines and it is felt that some collaboration is necessary to avoid duplication of effort. It is therefore being contemplated to invite the Junior Plant Physiologist, Regional Research Scheme I.C.T.A., to visit the colony and initiate experiments along these lines.

(2) Layering.

119. *Etiolation Method.*—An unsuccessful attempt was made to root by this method, low lying shoots of standing trees and adventitious shoots of fallen trees. These were pegged down flat

in shallow trenches and their bases were earthed up with potting soil with a view to encourage rooting in the region.

120. (*b*) *Marcotting or Air Layering.*—This method has so far given the most encouraging results and as such received more attention than the others. The technique is adequately described by Evans in the 1945-51 Report on Cacao Research pp 36-37, but has been modified to suit our purpose. By this method rooting of twigs occurred any time between three and four months. Moreover twigs of the following diameters were chosen $\frac{1}{4}$" $\frac{1}{2}$" $\frac{3}{4}$" and 1" and treated with different hormone preparations and rooting media. No attempt has however, been made to assess statistically the individual effects, or correlation if any, between hormones, rooting media and twig diameters.

121. The percentage success has been in the region of 35% and while it has not been possible to isolate all the causes for this limited success, very significant factors are the losses due to the breaking of the marcotted twigs, on the trees by high winds (particularly during the drier months) and the high rate of mortality during hardening.

122. Nevertheless, of the limited number of plants produced during the year, the following observational plots have been laid down.

Location	No. of Plants.
Mirabeau High Level Agricultural Station, St. Andrew's ..	19
Ashenden Cocoa Station, St. David's	12
Springs Estate, St. Andrew's	30
Mirabeau Estate, St. Andrew's	31
Capitol Estate, St. Andrew's	29
Mt Pleasant Estate, St Andrew's	44
Petit Etang Estate, St. David's	28

123. It is hoped that these neucleus plots will eventually be expanded to one acre demonstration plots.

Nutmeg Selection.

124. All original marcots were done on unselected trees, but a start has been made to marcot twigs from selected trees which survived the hurricane. These trees were pointed out by plantation managers and owners as being high producers, but prime consideration was given to the appearance of the trees and above all, mace quality, colour, shape and size of the dried nut and the minimum number to a pound.

125. *Importation of seeds from Malaya.*—A supply of seeds has been ordered from Kuala Lampur in Malaya for establishment here. These seeds are expected in early 1958. This has been prompted by the fact that nutmegs from the East are small, round, light grey in colour and yields a good oil. Grenada nutmegs on the other hand are oblong and dark grey in colour producing an inferior oil highly characterized by terpenes. These basic differences result in a higher price being paid for nutmegs from the east.

126. The overall effect is that the quality of Grenada nutmegs will gradually improve over the years as a result of natural crossing.

Staff Notes.

127. Mr. C. Evans was appointed Mechanic with effect from the 1st January, 1957.

128. Mr. B. Nyack was appointed Class II clerk with effect from the 22nd July, 1957.

Staff Members.

Mr. R. Gittens, Works Overseer,
„ O. John, Field Assistant,
„ C. Evans, Mechanic,
„ B. Nyack, Clerical Assistant.

WESTERHALL AGRICULTURAL STATION AND DISTRICT—SOUTH GRENADA.

Report by K. I. Rush—Agricultual Assistant.

Staff Members.

Mr. K. I. Rush, Dip., E.C.F.I.	Agricultural Assistant.
„ N. S. Knights	Junior Agricultural Instructor.
„ C. Alexander	„ „
„ L. Sayers	„ „
„ H. Stevenson	„ „
„ C. D. Augustine ..	„ „
„ H. A. Regis	„ „
„ J. Marrast	Temporary
„ J. E. Carter	Foreman.
Mrs. H. John	Clerical Assistant.

129. *Weather Conditions.*—The total rainfall recorded on the Westerhall Agricultural Station for the year total 63.04 inches. This year's rainfall is less than last year's by 7.72 inches. The average is 5.25 inches per month. The heaviest fall was 13.99 inches during the month of November.

130. As a whole, the season was an unusual one to the farming community, and crops suffered as a result, in that their production was late and poor.

Westerhall Agricultural Station.

131. Work on the station started late as the allocation for working the station was delayed, plus the condition of the weather. The fields were ploughed and harrowed where accessible, by the Ferguson Tractor. As a result of this the cost of preparation was reduced immensely.

132. *Manure.*—About 40 tons of farmyard manure were obtained from the farm and applied to one section of the field as the manurial application is based on a three year rotation.

133. *Food Crops.*—The planting of food crops again is on a three year rotational programme as hereunder :—

	Section I.	Section II.	Section III.
1st Year ..	Root Crop	Cereals.	Pulses.
2nd Year ..	Cereals.	Pulses.	Root Crop.
3rd Year ..	Pulses.	Root Crop.	Cereals.

134. The crops planted for the period under review are as follows :—Corn, yams, sweet potatoes, cassava, black eye, increase and pigeon peas and green gram.

135. There is an outstretching strip of sugar cane from Sections 1—3 for supplying planting material to farmers. However, this was cut this year and given to the livestock section for making silage. Following up the cutting, supplying was done and part of the area under cultivation was mulched with farmyard manure along with an application of Sulphate of Ammonia at the rate of 2 cwt. per acre. Varieties planted are 41227, 37161, 4098, 34104, 47,44, 4741.

136. Hereunder listed is the crops return and disposal for 1957 :—

	Quantity reaped	Value $ c.	Remarks.
Lisbon yams ..	997 lbs.	79.76	Kept for planting
Sweet potato ..	172 „	7.92	sold.
Corn	448 „	44.80	To be transferred to live Stock and some for plants.
Black eye peas ..	73 „	14.60	planted sold.
Green gram ..	11 „	2.40	„
Increase peas ..	16 „	3.20	„
Cassava ..	350 „	5.25	„
Pigeon peas ..	6¼ „	1.20	damaged by weevil.
Tephrosia Candida	17¼ „	—	given to peasant for planting material for shade and barrier.
Kudzu ..	19¼ „	—	7½ lbs to Carriacou. 11¾ lbs given to peasants.

137. *Manurial Trial.*—Corn is the crop chosen for the permanent manurial trial.

138. *Apprentices.*—Ten apprentices spent three months on the station for training, eight sponsored by Government and two independent. Later on in the year they were placed with Junior Agricultural Instructors in the field and three were in South Grenada.

139. *Visitors.*—Several schools visited the station plus several persons from inland and abroad.

AGRICULTURE IN THE DISTRICTS.

Rehabilitation and Extension.

140. In the main all work in the district was of a rehabilitation nature.

141. *Banana.*—South Grenada was never a banana producing area, but rather an area of canes, nutmeg, spices, ground provision, and livestock, but as a result of the hurricane in 1955 banana cultivation gained favour from the point of view that nearly all the above mentioned crops have been destroyed in some way or the other, and the only salvation to a quick recovery of the soil and returns was to turn over to banana cultivation.

142. Suckers were imported from St. Lucia, St. Vincent and Dominica in order to cope with the demand for planting material.

143. Banana suckers imported and distributed for the period under review are as follows :—

Importation :
84,272
Distribution :
Estates .. 19,275
Peasants .. 61,552
Spoils and Shortages 3,445

144. *Cocoa.*—This crop bore well in the middle and lower belts although it was late. Estimated production 60% as compared to pre-hurricane production.

145. The demand for these plants is far above the production and one or two people have started to produce their planting material from marcotts.

146. The distribution of clonal cocoa plants for the period under review are as follows :—

Original	..	22,897
Acreage	..	53
Supplies	..	3,146
Acreage	..	7

147. *Nutmeg.*—This crop is gradually declining in production as several trees have died out. Farmers are replanting, but it would take a long time to regain the pre hurricane production.

148. Presently work on the propagation of nutmeg seedlings are in progress at the Boulogne Cocoa Station and as a result of its success, plants would come into bearing in two to three years, thus hastening the rise in production.

149. Nutmeg and mace received at the nutmeg receiving Depots for the period under review are as thus :—

Station.	Green lbs.	Dry lbs.	Grinders lbs.	Whole Mace lbs.	Broken Mace. lbs.
St. Paul's ..	19,589	4,021½	164¼	2,455¾	185¼
Thebaide ..	43,166¾	16,672¼	407	4,255¾	1,066
Vincennes ..	27,346¼	1,939½	121½	2,191½	142
LaTante ..	35,942	4,075⅓	78	3,015½	949 (for 2 months)
Snug Corner ..	10,613½	1,937¾	69¼	949¼	80 (for 1 month)
Total ..	136,657½	28,646½	840	12,868¾	2,422¼

150. *Coffee.*—Distribution of Robusta Coffee seedlings commenced just before the ending of the planting season and as a result very few plots were properly prepared, nevertheless, 5,464 plants were distributed and planted.

151. *Citrus.*—Trees bore exceedingly well and a great quantity went to the spoil as a gult in the market was experienced.

152. Propagation of citrus is in progress at the Mirabeau High Level Station for distribution to farmers. It is hoped to propagate seventeen kinds of citrus.

153. *Coconuts.*—Trees show signs of health and produced fairly well. Farmers have availed themselves of the opportunity of the free distribution of plants and as such the undermentioned were distributed and planted :—

Ordinary	..	8.970
Dwarf ..	..	1,577
Mixed ..	..	930

154. *Pineapples.*—Suckers were imported from Jamaica and the variety consisted of mainly Spanish Red, except in the case where the first shipment came down and were put in nurseries on the stations. At Westerhall the varieties consisted of Spanish Red, Natal Queen and Sugar Loaf.

155. Suckers received and distributed total 38,000.

156. *Sugar Cane.*—A good crop was harvested. Farmers were advised to intensify their cultivation rather then extending it, as the method of cultivation need improving to increase the tonage per acre rather than an increase of acreage.

157. Some farmers have realized that cane cultivation has become uneconomical, especially at the present rate of $1.56 per day of eight hours and the standard of work is below par, so many are considering diversification of cultivation, while others are turning and have turned over to livestock.

158. Hereunder listed are figures of the operation of the Woodlands Sugar Factory :—

Cane Ground :
15,588 tons.

Sugar Produced :
14,816 bags.

Sales : 1,481.6 tons

Dark Crystal :
2,492.4 tons

Special Crystal :
26 ,,

There was a balance from 1956.

Importation.

Refined (tons)		Unrefined (tons)	
United Kingdom	69.9	Barbados ..	363.3
Barbados ..	9.6	British Guiana ..	57.9
Trinidad ..	22.2	St. Kitts ..	10.3
British Guiana ..	.6		

Other Crops.

159. *Corn.*—This crop yielded fairly well, but was severely damaged by rats.

160. *Pigeon Peas.*—Production can be considered fair despite the unfavourable weather condition.

161. *Black Eye Peas.*—This crop bore well, but was heavily attacked by worms.

162. *Sweet Potato.*—This crop was the poorest for may years and the little produced was attacked by rats, and many were rotten due to the state of the weather.

163. *Tannia and Dasheen.*—These crops yields were moderate. But much more were expected.

164. *Yams.*—This crop yielded very little except in exceptional cases.

165. *Cassava.*—This crop also accumulated very little tubers and there again the w eather conditions are attributed to this poor production.

166. *Sapodilla, Soursop, Golden Apple, and Pears.*—The crop was good and the majority were shipped to Trinidad.

167. *Market Garden.*—The production of vegetables fell under the demand and despite the efforts made by some farmers, the position remained the same. As a result prices were high.

168. *Soil Conservation.*—There was a steady increase in the call from farmers for work in this direction and the extension staff exerted their utmost to cope with the call and hereunder listed gives an idea of the work done :—

Vegetative barrier	.. ..	167,710 feet.
Storm or head drain	.. ..	155,550 „
Contour drain	.. ..	108,883 „
Run off drain	.. ..	43,910 „
Gully control	.. ..	16,837 „
Kush-Kush grass barrier	..	49,445 „
Angelicia barrier	.. ..	50,050 „
Gliricidia barrier	.. ..	68,660 „

Number of Soil Conservation applicants under the Rehabilitation programmes are as follows :—

	Areas.		
	IXA	IXB	X
No. of applications submitted	90	144	98
No. of applications approved	90	144	98
No. of claims paid ..	69	99	70

Estimated acreage—5,425 (approximately).

Short Term Loans.

	Areas.		
	IXA	IXB	X
No. of applications submitted	8	7	22
No. of applications approved	5	5	18

Co-operatives and Lectures to Groups.

169. There are three Farmers' Clubs in South Grenada viz : Pomme Rose, Apres Toute and Vincennes. By no means these clubs function smoothly throughout, but there still exists a cohesion of some members and as such these clubs are still in operation and show a steady but gradual development.

170. During the month of June a few clubs from the North visited the Westerhall Agricultural Station, organised by the Agricultural Assistant of the North viz : (1) St. Patrick's, (2) Union-Samaritan, (3) St. Mark's, (4) St. Andrew's Peasant Association. The Administrator, Minister of Trade and Production, Superintendent of Agriculture, Agricultural Officers and several others were present at the field day. After touring the station, the clubs were taken around the district by the Agricultural Assistant of the district, to see what the other farmers were doing.

171. Several field days were organised to visit the Cocoa and High Level Stations at Boulogne, Mt. Horne and Mirabeau. These tours were conducted by the Cocoa Agronomist and Agricultural Officer (Cocoa).

172. On the 30th May a Home Improvement Demonstration was given to the Pomme Rose Farmers' Club under the direct supervision of Miss W. Isaac—Education Department, along with Misses Frazer and Whiteman.

173. During the said month a banana shed was erected at Pomme Rose with aid from the parent body—(Grenada Banana Co-operative Society),—several other small sheds were erected with joint efforts to accommodate their banana.

174. Day by day farmers are beginning to come out from their airtight compartments and accepting this form of co-operation.

Banana shipped by Farmers' Clubs are as follows :—

	No. of stems	Weight lbs.	Value. $ c.
Vincennes ..	975	43,884	1,364.55
Apres Toute ..	X	32,591	X
Pomme Rose ..	3,072	64,734	5,062.44

X Figures not available.

REPORT WEST GRENADA DISTRICT,

Mt. Moritz Agricultural Station and West Grenada.

(A) DISTRICT.

175. (1) *Staff.*—During the year the Extension Staff for District West was as follows :—

E. O. Barrett	Agricultural Assistant.
M. A. Wilson	Junior Agricultural Instructor.
Orgias Campbell	„ „
Sydney De. C. Law ..	„ „
Dawson Hosten	„ „
Osbourne Knight ..	Foreman, Mt. Moritz Agricultural Station.
Kyron DeLandro ..	Clerical Assistant „ „

176. (2) *Weather.*—The weather was fairly good throughout the year although a delayed rainy season held up planting until late June to early July. Unusual dry weather in September and October also delayed planting. Strong winds in November resulted in the loss of a fair number of banana plants and stems of fruits.

Rainfall from three points in this District was :—

Months	Mt. Moritz Agric. Station	Maran Cocoa Station	Belvedere Estate
January	9.30	10.35	12.28
February ..	5,80	5.37	8.10
March	1.56	2.32	3.32
April	4.47	6.42	13.94
May	3.12	3.66	11.58
June	6.35	7.69	10.50
July	7.19	11.76	13.85
August ..	12.56	13.15	15.31
September ..	2.02	10.13	16.81
October	3.69	6.66	11.66
November ..	15.44	12.69	12.32
December ..	6.51	9.32	11.98
Total ..	78.01	99.46	141.65

177. (1) *Cocoa.*—During the year Cocoa was attacked by thrips which set back the Recovery of Cocoa fields. On some Estates e.g. Black Bay and Grenville Vale Estates, some cocoa fields were cut back as being uneconomical. A good crop was obtained as trees bore well, although the crop was late. Rats did a fair amount of damage to ripe pods, an estimated 10%—12% of the crop being thus destroyed.

178. Distribution of rooted Cocoa Cuttings started in July and was held up in September because of the dryness of the weather. Altogether 44,561 rooted cuttings were distributed in this district, 40,841 being originals and the remaining 3,720 being supplies. At the end of the year established plots were doing fairly well.

179. Approximately 3,400 cwts. of dry cocoa was sold from this district during the year.

180. (2) *Nutmeg.*—A good amount of replanting continued throughout the year. Some fallen trees which bore last year died back during this year resulting in a smaller yield being obtained from some fields. Young trees transplanted after "Janet" are coming into bearing.

181. Prices remained high throughout the year and the large bonus paid to the Society helped to boost the amount of replanting. Approximate yields from this district for the year was—

Nutmeg	144,062 lbs.
Mace ..	14,890 lbs.

182. (3) *Bananas.*—The position with this crop was good throughout the year. Planting was carried out on a steady scale and during the year distribution of plants continued. A total of 125,708 plants were distributed for the year of which 68,617 were imported and the remaining 57,091 obtained locally from various sources.

Most estates in this district did all new planting during the year with their own plants which seemed to be in adequate supply. Approximately 135,000 stems of bananas were exported from this district during the year.

183. A drive for better handling of bananas for export resulted in the erection in this district of a large number of sheds for the protection of fruits from the sun and in the provision of an adequate supply of trash to prevent bruising. Dressing tables, mats for scales stands for Diothene sleeves, were also brought into use. A number of demonstrations on the different aspects of banana cultivation by the Banana Officer was of very great value.

184. The Concord Farmer's Club started the shipment of bananas on a Co-operative basis during the month of June and for the remaining six and a half months shipped 4,000 stems of fruits.

185. (4) *Coconuts.*—The condition of this crop was fair throughout and replanting was carried out on an increasing scale. Yields were fair though some fields e.g. in Perseverance and Woodford areas yielded very little, and appeared to be in a very poor condition.

186. The total of 4,187 plants were distributed in the district for the year. These were as follows ; Ordinary 2,242 ; Dwarf 1,387 ; and Mixed 548 plants.

187. (5) *Coffee.*—A small quantity of coffee was reaped in this district during the year. This was mainly from Woodford and Annandale Estates. The crop was disposed of locally.

Distribution of Rubsta Coffee plants was started towards the end of the year. A total of 16,325 plants for the establishment of 70 plots was distributed.

188. (b) *Food Crops.* (1) *Yams.*—A very good crop was reaped in January and February from the 1956-1957 crop. Replanting was delayed until late June to early July because of the late rainy season. Planting materials were somewhat scarce. At the end of the year plots were not looking as well as was to be expected. Guinea Yams yielded below expectations, but at the end of the year a fair supply of yams was available. Indications were that the 1957-1958 crop would be much below the previous year's crop.

189. (2) *Pigeon Peas.*—A very good crop was reaped in the 1956-1957 crop. Early peas did not bear well, perhaps because of the dry conditions during September and early October. Towards the end of the year green peas was in fair supply although a high percentage of the crop was being destroyed by rats, mice and bats.

190. (3) *Sweet Potatoes.*—In the earlier part of the year from January to May, potatoes were in plentiful supply: a good crop being harvested. Difficulty in disposing of this crop was encountered by some farmers. Damage by rats was slight. Due to late rains replanting was held up until late June to July, and in the remaining months of the year potatoes was scarce, rats destroying the larger part of this crop, in some cases no reaping at all being possible in entire fields.

In November and December a great deal of planting was carried out throughtout the district and at the end of the year, fields were in good condition although rats had already started to attack them.

191. (4) *Corn.*—Planting of the Spring crop was delayed by weather conditions and the crop was late, the greater part being reaped between September and early October. Yields were good, but rats was a major pest. Dry weather in October delayed the planting of the Autumn crop which was also badly affected by mice, which dug out plants before, or soon after germination. At the end of the year established plots were in fair condition but the crop will be a very small one as very few farmers took the trouble to supply as often as was made necessary by mice.

192. (5) *Tannias Dasheen and Eddoes.*—The 1956-1957 crop yielded well and in the earlier part of the year until April these crops were fairly good supply. Replanting was carried out during July. Eddoes yielded well and were in good supply at the end of the year. Tannias and Dasheen were setback by the dry condition in September and October and at the end of the year were very scarce. A poor crop of Tannias is expected.

193. (6) *Vegetables.*—Fair quantities were grown throughout the year. Cabbage and Tomato were plentiful during March and April and continued in fair supply until around July when a scarcity of these vegetables was encountered. Tomato plots were heavily attacked by Fusarium Wilt and high losses also occurred in this crop as a result of infestation of Blossom-end Rot.

194. Carrots, Chive and thyme, French-beans, cucumbers, and lettuce were grown in fair quantities. A tendency towards glut on the market with low prices, followed by a period of scarcity with high prices was even more marked than in previous years. Tomato ranged in price from 20-48 cents per lb. and Cabbage from 16-20 cents per lb.

195. (c) *Other Crops.* (1) *Citrus.*—Demand for plants continued to be high and a large amount of budding and top-working was carried out by the Extension Staff. Established trees were in good condition and a good yield of all varieties was obtained during the year. In the last two months of the year grapefruits and oranges were in plentiful supply, no market being obtained for a large percentage of the crop.

196. (2) *Canes.*—Planting of canes continued in many areas of this district, the canes being purchased by the Sugar Factory from as far as Dothan and Grand Roy. Most of the canes in this district was however, handled by small mills of which there were approximately ten in operation during the crop. A high infestation of Cane Borer was observed.

197. (3) *Breadfruit and Mangoes.*—These crops seemed to have completely recovered from the damage done to them by hurricane "Janet". Yields were good. First crop of breadfruit was late but at the end of the year trees were again carrying a good load of fruits.

198. (4) *Other Fruits.*—A large demand for good quality fruit trees of all kinds was encountered, Most fruits were in fair supply, sapodilla, golden-apples, and sugar- apples being especially plentiful in their season.

199. (3) *Livestock.*—Livestock on the whole was maintained in fairly good condition throughout the year. There was a marked scarcity of nearly all types of livestock, particularly cattle and goats. Donkeys were in great demand for manure making, and the abundance of bluggoes and figs caused an increase in the demand for young pigs for rearing. Grass was in plentiful supply even during the dry season. Planting of grass was done largerly along the contour as vegetative barriers.

Twenty-six (26) cases of diseases were treated as follows :—

Retained Placenta		6 cases
Dystocia	..	6 „
Mastitis ..	..	1 case
Injuries	..	5 cases.
Worms ..	..	8 „

200. The following animals were castrated during the course of the year.

Bulls	..	1 only.
Ram	..	3 „
Bucks	..	4 „
Pigs	..	20 „
Total	..	28

201. During September there was a fairly large number of deaths among young pigs, which seemed to have been attacked by Hog Cholera. In December a fairly large number of fowls died in the Mt. Moritz—Grand Mal area from a disease which resembled Fowl Cholera.

202. In November all Junior Instructors in this district were given a short course in Animal Husbandry by the Livestock Officer.

203. (4) *Extension Work Done.* (*a*) *Soil Conservation Work.*—During the year 671 applications for Soil Conservation grants were recommended. These involved a total of 9,273 acres on which a total of 1,040,798 feet of Storm-head drain, 654,761 feet of run-off drain, 1,456,090 feet of Vegetative barriers, and 10,100 feet of stone barriers are to be established, and 423,862 feet of gully courses protected. These involve a total grant of $47,115.50.

204. A total of 284 claims for persons who had completed a part or all of their Soil Conservation programme, were sent into the C.A.R.C. Total sum involved in these claims was $12,471.03.

205. During the year 280,177 feet of contour lines for the establishment of drains and barriers were laid down by the Extension Staff in this district. Bostrum levels were used but the use of collapsible "A" frames proved very helpful.

206. (*b*) *Rehabilitation.*—Eighty-two (82) applications for short-term loans were investigated and recommended during the year. Of these thirty-two totalling 296 acres were for growing bananas in pure stand as nurse crop for orchard crops, 37 totalling 88 acres were for bananas as mixed crop and as nurse crop for orchad crops and 13 totalling 1431/2 acres for mixed crops inter-cultivated with orchard crops. Total of these applications was $47,591.00.

207. (*c*) *Visits and Advisory Work.*—During the year 348 visits were paid to Estates and 1,189 visits to small-holdings in this district for the purpose of advisory work. Advice was given on a wide range of subjects chief among which were (a) preparation of plots for planting clonal cocoa, (b) after care of Clonal cocoa, (c) pruning and other cultural practices of banana cultivation, (d) soil conservation practices, (e) cropping programme, (f) preparation of plots for planting coffee, (g) fertilizer applications, (h) establishment of suitable wind-breaks and (i) control for thrips and other insects.

208. (*d*) *Other Activities.*—Demonstrations to the public were given by the Banana Officer during the year. Demonstration to the staff were given at different times during the year, among them laying out of irrigation ditches by the Banana Officer, banana pruning by the Banana Officer, Terracing by the Agricultural Assistant, Identifying Soil Types by the Land Use Officer, Cocoa cultural practices and coffee planting by the Cocoa Agronomist and the Agricultural Officer (Cocoa).

209. During October a special drive to obtain better handling of banana for export was launched by the Rehabilitation Commissioner, the Superintendent of Agriculture, and the Banana Officer, and for the balance of the year the Extension Staff devoted banana purchasing days to this work. Very good co-operation was obtained and at the end of the year a great improvement was noticable.

210. (*e*) *Key-Farmers Plot.*—Nine (9) Key-farmers' plots were maintained in good order during the year and records of progress kept by the J.A.I's. on the progress of each holding. All farmers co-operated well and their holdings were visited by other farmers at the J.A.I's instigation.

211. (*f*) *Co-operatives.*—The Concord Farmer's Club continued to function during the year and since June has been doing the Co-operative shipment of bananas. The Club shipped a total of 4,000 stems for the 6 1/2 months of its operation.

212. Co-operative working Groups were maintained by the Club. The Grand Roy Farmers Club which was started in March made good progress and had well organized working groups. At the end of the year the club was working on a shed to start the co-operative handling of bananas.

213. New Clubs were started at Happy Hill, Boca and Clozier, the one at Clozier also having working groups. Progress in these three last named clubs was very slow.

In August a tour of the Westerhall Agricultural Station and the Bolougne and Mirabeau propagation Stations was made by members of all four clubs.

The Concord and Grand Roy Clubs have made a start on the preliminary classes for registration and were greatly helped by Messers Martineau and Louisey. The Concord Club celebrated their First Anniversary during the year.

214. (5) *Pests and Diseases.*—Among crops the chief diseases noticable were Fusarium Wilt and Blossom-end-Rot of Tomato. Chief pests were thrips which did a great deal of damage to Cocoa fields, and rats which did very heavy damage to the cocoa crop and to corn, sweet potatoes, and several other crops.

215. Towards the end of the year, damage done by rats was very high and reached an alarming proportion in areas which grow largely food crops. Some farmers were discouraged in further planting of certain crops. Scale Insects and Cocoa beetles were encountered but not on a large scale.

216. Among animals, worms and mange were fairly common, while out-breaks of Swine Cholera, and Fowl Cholera occurred in this district during the year.

(B) Station.

217. (1) *Crops.* (*a*) *Cocoa.*—The plot was in a fair condition throughout the year. Spraying against thrips was carried out in April. Heavy pruning to remove parts of plants badly damaged by hurricane "Janet" was done early in September. 18 lbs. of dry cocoa was sold during the early part of the year this being obtained from some pods left over from the 1956 crop. No reaping was done from the 1957 crop but at the end of the year trees carried a good load of nearly mature pods.

218. (*b*) *Citrus Orchard.*—The orchard in the lower part of Field one was abondoned due to general unthriftiness of plants caused by unsuitability of soil type. Orchards in the upper portion of field one and field three were maintained in good condition and bore a fair number of fruits.

219. A small number of citrus plants were produced during the first three quarters of the year. These were as follows :—

Marsh seedless Grapefruits ..	215
Washington Naval Oranges ..	75
Valencia Oranges ..	150
Limes	20
Total ..	460

220. Some of these were used for planting out on the Station and a fairly good number supplied to Carriacou. The remaining plants were sold at 36 cents each.

221. (*c*) *Yams.*—Yields for the 1956-1957 crop was good. Yields were as follows :—

Lisbon Yams			5,298 lbs.
Moonshine Yams ..			997 „
Bush Yams			100 „
Other Varieties :			
White Yams	92 lbs.	..	468 „
Smooth Statia	36 „		
Rough Statia	185 „		
Atuta Yams	155 „		
Total			6,863 „

222. Only three (3) plots, (the Permanent Manurial Trial plot, The Method of Planting Trial plot, and a small plot of mixed varieties) were replanted.

223. (*d*) *Pigeon Peas.*—A fairly good yield was obtained from the 1956-1957 crop when only one plot was planted. 171 lbs of dry peas was obtained and 32 lbs. of green peas sold.

224. Eight plots of Pigeon Peas were planted during March, April and May for the dual purpose of controlling Para grass and keeping down operational costs. At the end of the year trees showed signs of a good yield although damage to the crop by rats, mice and bats was high. 75 lbs. of green peas were sold in December.

225. (*e*) *Corn.*—Rats completely destroyed two plots of Spring corn planted late in June. Two (2) plots of Fall corn planted by the apprentices late in October were in good condition at the end of the year.

226. (*f*) *Bananas.*—During the early part of the year all bananas in field 1 and Field 4 were stumped out and the plants handed over to the Banana Officer for distribution. During December a small plot of 120 plants were established in Field 3. This plot was largely for the purpose of providing practical work in Banana cultivation for the apprentices.

227. (*g*) *Vegetables.*—Fair yields was obtained early in the year from vegetables planted during November and December, this year plots of String-beans, carrots, cabbage and tomato were established by the 1957-1958 apprentices.

228. (2) *Livestock.* (*a*) *Grass Plots.*—During October and November supplying of the Gautemala and Guinea grass plots was done. Kudzu was planted throughout the Guinea grass plots.

229. (*b*) *Fences.*—All fences were repaired during the year.

230. (*c*) *Dairy Pen and Stock Buildings.*—During the year the Donkey Shed and bull stall were pulled down. The milking-shed was pulled down and its concrete walls and floor used for the rebuilding of a new covered manure shed.

231. A calf-pen with stalls for three calves was built and the Boar Sty was rebuilt, concrete sides replacing the pig wire.

232. Guttering was provided for the office and boucan in order to augment the unsatisfactory pipe borne water supply.

233. (*d*) *Animals.*—During the year 2 heifers and 2 donkeys were sold by Public Auction. Two (2) cows, (Matilda and Verina) were transferred to Westerhall, and 1 cow (Quail's Sally) transferred from Westerhall.

234. Two bull calves were born in November to Quails Sally, and Nancy's Mary.

235. A Boar, a Buck and a Ram were maintained for Service. Services were :—

Boar ..	13
Buck ..	10
Ram ..	1
Total ..	24

236. All animals on the Station were maintained in good condition. Animals on the Station at the end of the year were :—

Cows ..	3
Bull-calves	2
Boar ..	1
Buck ..	1
Ram ..	1
Total ..	8

237. (3) *Apprentices.*—The 1957-1958 apprentices were stationed here during the last quarter of the year. They received practice in the use and care of agricultural tools and in vegetable cultivation. They also did preperation of land for banana and the planting of bananas. Talks were given them by the Agricultural Assistant and the Banana Officer. There were eight regular apprentices and five Ex-servicemen.

(4) Revenue for the Year.—

Sale of Yams ..		$106.05
Sale of Pigeon Peas ..		$ 32.05
Sale of Vegetables :		
Beets ..	2.24	
Carrots	2.32	
Tomato ..	12.30	$ 28.60
Lettuce ..	.68	
Cabbage	.60	
Turnips ..	10.46	
Sale of Bluggoes, figs etc.		$ 4.32
Sale of dry cocoa ..		$ 4.50
Sale of Citrus plants ..		$ 64.08
Service fees		$ 14.40
Total		$254.00

(5) *Experiments.*—(*a*) *Permanent Manurial Trial* (*Yams*).—Reaping of this trial was done in January. Results were:—

Block Number	Fertilizer Application N.	P.	K.	No. of Holes.	Quantity Reaped lbs.
Block 1	0.	0.	0.	48	71 lbs.
,, 2	1.	2.	1.	48	100 ,,
,, 3	1.	0.	2.	48	122 ,,
,, 4	1.	1.	0.	48	132 ,,
,, 5	2.	2.	0.	48	102 ,,
,, 6	0.	1.	1.	48	156 ,,
,, 7	2.	1.	2.	48	95 ,,
,, 8	2.	0.	1.	48	103 ,,
,, 9	0.	2.	2.	48	146 ,,
,, 10	2.	1.	0.	48	111 ,,
,, 11	0.	1.	2.	48	126 ,,
,, 12	2.	2.	1.	48	152 ,,
,, 13	1.	0.	0.	48	130 ,,
,, 14	0.	0.	1.	48	138 ,,
,, 15	1.	1.	1.	48	102 ,,
,, 16	0.	2.	0.	48	147 ,,
,, 17	2.	0.	2.	48	140 ,,
,, 18	1.	1.	2.	48	107 ,,
,, 19	2.	1.	1.	48	112 ,,
,, 20	0.	0.	2.	48	122 ,,
,, 21	1.	0.	1.	48	107 ,,
,, 22	1.	2.	2.	48	99 ,,
,, 23	2.	0.	0.	48	101 ,,
,, 24	0.	1.	0.	48	83 ,,
,, 25	1.	2.	0.	48	106 ,,
,, 26	2.	2.	2.	48	119 ,,
,, 27	0.	2.	1.	48	99 ,,

238. Replanting of the 4th year's trial, for residual effect was done during May. Moonshine Yams were planted as Gaurd Rows and Lisbon Yams in Trial Blocks.

239. (*b*) *Methods of planting Trials* (*yams*).—This experiment was harvested (for the second year) during January. Result was as follows :—

Method of Planting	Area of Plots.	No. of Holes	Yields for 1955—1956	Yields for 1956—1957
Trench & Bank	0.005 acres	40	51½ lbs.	34 lbs.
Trench ..	0.005 „	40	54 „	30 „
Furrows ..	0.005 „	40	41 „	60 „
Mounds ..	0.005 „	40	37 „	61 „
Hoe Chaps .. (Yams only)	0.005 „	40	18 „	77 „
Hoe Chaps .. (Yams and Tannias)	0.005 „	40	(Y13) (T 23) 36 „	(Y-56)76 „ (T20)

240. This experiment was replanted during May on a larger scale, 0.029 acre being set out for each plot.

241. (*c*) *Observation Plot.—Sweet Potatoes.*—During February to April notes were made on 24 varieties of Sweet Potaotes set out in an Observation plot during December. These notes on Vegetative pecularities, rate of growth, time of maturity, tuber size, colour, and shape, palatability, storage qualities etc., were forwarded to Mr. H. J. Gooding, Plant Breeder at the I.C.T.A.

Varieties under observation were :—

(1) David	(2) Flavius	(3) V-14	(4) Georges,
(5) Pumpkin,	(6) Six Weeks,	(7) Ready Bee,	(8) Eldica,
(9) Molko,	(10) Bolivia,	(11) Justin,	(12) Sealy
(13) Brass Cannon,	(14) Elmo,	(15) Jones,	(16) Poor Man's Friend,
(17) Barker,	(18) Cummings,	(19) Black Rock,	(20) Caroline Lee
(21) B-5,	(22) Monsterrat,	(23) Purple Flower,	(24) Barbados.

242. All varieties were replanted in a new Observation Plot in July and to the above varieties were added the *Norman* and *Frizzle* varieties.

243. In November, a Sweet Potato Varietal Trial (Randomized Block design) including 16 of the above varieties selected by Dr. Gooding was laid out. An Observation plot to check maturity was established with the same 16 varieties used in the Trial.

244. (*b*) *Pigeon Peas.*—Ten varieties of Pigeon Peas were planted in an Observation plot (3 replications) in July. Notes were made as to growth habits, time of flowering, fruit-set, number of seeds per pod, degree of worm infestation, palatability, and yield. At the end of the year the taking of notes continued.

245. Pollination bags were used to ensure Self-pollination in some flowers of each variety.

246. Varieties in this plot were :—

(1) Parasol A.	(2) Hedge,	(3) Broad Husk,	(4) Parasol B.
(5) Whit P.P.	(6) Calico,	(7) Caracas,	(8) A-Tout Temps,
(9) LaSagesse.			

247. (*c*) *Yams.*—Twelve varieties of yams were set out in an Observation plot during July. Notes on growth and Vegetative habits and pecularities were made.

248. (*d*) *Tannias and Dasheen.*—Eight (8) and two (2) varieties of each respectively were set out under Observation and Notes were made on each variety. Eddoes (3 varieties) were also included in this plot.

249. (*e*) *Tomato.*—Three new varieties of Tomato, Manasoto, Manalee, and Marglobe Supreme were supplied towards the end of October by the Agricultural Officer (Cocoa). These were set out under observation and at the end of the year observation continued.

250. *Cane Propagation Plots.*—All plots of cane were maintained throughout the year and plants of four varieties were supplied to the Cane Farming Officer and to Carriacou.

251. B. 49-119 was introduced early in the year and was increased and some plants supplied to the Cane Farming Officer. Plots of B.4362, B-41211 and B-4098 were dug out and replanted elsewhere on the station.

(*d*) *Compost Trials.*—In November five compost heaps were set out as follows :—

(1) Mixed grasses (not including water, devil, or para grass or Kus-kus grasses.
(2) Para and Water Grasses mixed with 30–40% of other grasses.
(3) Guinea Grass only.
(4) Kus-kus Grass only.

252. (5) Kus-kus Grass with 50% of other grasses. All heaps were dressed with Sulphate of Ammonia at the rate of 1 lb., to every 6 cubic feet, fertilizer being applied on top of every 2–foot layer. All heaps were turned at four weekly intervals. Trials continued at the end of the year.

REPORT EAST GRENADA DISTRICT.

(By George Ogilvie, Agricultural Assistant).

253. The extension work was carried out by G. L. Ogilvie, Agricultural Assistant, and eight Junior Agricultural Instructors—E. Calliste, C. Mitchell, S. Joseph, C. Rennie, J. Telesford, B. Pierre, R. Hannibald and B. Philbert.

254. *Weather Conditions.*—Rainfall for the year was favourable. The distribution was suitable to crop production. The dry season was not severe and during the rainy season there was no serious flooding. The planting season however, was delayed owing to an unusual dry spell experienced in June and the early part of July.

255. *Cocoa.*—The 1956/57 crop showed an increase over the previous year. Fields recovered wonderfully especially those planted with clonal cocoa. Most estates and a number of small farmers, replanted their fields with clones and budded seedlings. The method adopted is the old trees are cut back heavily and bananas planted as nurse shade.

256. Old fields were also regenerated by cutting back and encouraging suckers, then the one nearest the ground is left to take the place of the parent and the others cut off.

257. During the year planting of budded seedlings and clonal cocoa was carried out between July and December. A total of 1,434 budded seedlings and 101,333 clones were distributed. The price of cocoa ranged from 12 to 22 cents wet and 36 to 66 cents per pound dry.

258. *Pests.*—There was an attack of thrips (heliothrips rubrocinctus) throughout the lower regions which caused some concern but was effectively controlled by spraying.

259. *Witches' Broom.*—(Marasmius perniciosus) the incidence of this disease was not very high owing to the effective control measures carried out by the department, estates and small farmers.

260. *Nutmegs.*—Although this crop was so badly destroyed, yet the remaining trees gave much higher yields than were expected. In the North of St. Andrew there can be seen, still standing nutmeg fields not touched by the hurricane which is a good example of pre-hurricane cultivation.

261. Already some fields on certain estates have recovered so well that branches are meeting to form a canopy. The price of nutmegs remained good throughout the year.

262. Periodic application of fertilizers was recommended with a high concentrate of nitrogen to promote vegetative growth.

263. *Bananas.*—The importance that this crop has assumed in the economy of this area is evident from the enthusiasm shown by all and sundry to produce it. There has been a great demand throughout the year for planting material and farmers responded well to the advice and encouragement given by the Agricultural staff.

264. Demonstrations in the proper method of planting, maintenance and harvesting were held on five peasant holdings and four estates throughout the parish and was well attended. The Banana Officer gave a series of talks on these occasions.

265. Planting materials were purchased from St. Lucia for distribution and towards the end of the year when the quality of materials supplied was very poor, 25,000 suckers were purchased from St. Vincent in order that farmers should reap the greatest benefit and be encouraged in this industry. The purchase of planting materials from other islands was discontinued and suckers purchased locally by the department at 15 cents per sucker for redistribution.

266. Towards the end of the year a campaign to improve the quality of marketable fruits and the proper care and handling of them was launched by the Rehabilitation Commissioner and successfully carried out by the staff. Farmers responded well and the quality of marketable fruits was better. During the year 97,522 suckers were distributed throughout the districts, 36,382 in North St. Andrew's, 41,689 Central and 19,451 South.

267. Towards the end of the year a marked improvement in the general cultivation of this crop was noted.

268. *Coconuts.*—Recovery from the hurricane seems to be the slowest with regards to this crop. Yields were low and most of the nuts collected were sold outright. A small percentage was converted into copra. Rehabilitation of old fields was encouraged. A 12 acre plot was laid down on Carriere Estate, planting distance 26′ x 26′ and holes 3′ x 3′. The plants are doing well. A total of 9,063 seedlings were distributed. Of these 7,069 were ordinary, 1,496 dwarfs and 498 mixed varieties.

269. *Coffee.*—On LaForce estate a coffee plot containing 771 robusta seedlings was planted at a spacing of 9′ x 9′ with bananas as ground shade in November. Plots were also planted on Mt. Pleasant Estate 970, Capitol 870 and Mt. Horne 2,000 at the same planting distance. The other system of planting adopted was "sun hedge" double rows of coffee $3\frac{1}{2}$′ x $3\frac{1}{2}$′ staggered, the rows $9\frac{1}{2}$ feet apart. Holes were dug 2′ x 2′. On Carriere Estates 2,805 seedlings were planted this way.

270. Coffee was also planted in some areas as "stop wash" hedges 3' x 3'. A total of 15,841 seedlings were distributed for the year.

271. *Pineapples.*—A shipment of suckers was received from Jamaica of the Red Spanish variety and 36,150 of these were planted mostly in South St. Andrew. Plots ranging from 50 to 1,300 plants were established on peasant holdings and estates.

272. On Crochu Estate an *ad hoc* demonstration and nursery plot was planted, the area is approximately $\frac{1}{4}$ of an acre and the varieties planted are Red Spanish 1,250, Sugar Loaf 1,000, Natal Queen 250 and mixed varieties 500. The plants are doing well and can be irrigated easily if necessary.

273. *Food Crops.*—There was an abundance of bluggoes, bananas not for export, tannias, dasheen, yams and pigeon peas. A fair quantity of market vegetable was available throughout the year.

274. *Livestock.*—Apart from little external parasites the general health of animals was good. There was no major outbreak of diseases.

275. *Soil Conservation.*—The bulk of work under this head, was the pegging of contour drains and stop wash barriers, together with run-off drains and gully control. A great deal of this work was done on both estates and small holdings by the extension staff.

276. 300,638 feet of drains, 208,227 feet barriers, 8,706 feet gully control and 20,695 feet run-off drains were pegged during the year.

277. *Short term Loans.*—During the year there were ninety-three (93) applicants who applied for $23,336.00 which involved 604¼ acres.

278. *Soil Conservation Grants.*—Under this scheme applications were received from 821 farmers affecting 9,629¼ acres valued $52,524.64.

279. *Advisory.*—The staff continued to give advice and demonstration to farmers on all aspects of agriculture, with special emphasis on banana and cocoa cultivation. During the year the number of visits made for extension work were; estates 353, small holdings 2,912.

280. *Pests and Diseases.*—The most troublesome pests from the farmers' point of view were rats and mongoose which did a great deal of damage to cocoa and ground provisions. The Agricultural department in collaboration with the Sanitary Department carried out a control campaign. Poison bait was set on estates and small holdings. The campaign was a success.

281. Thrips in cocoa posed a minor problem, these were partly controlled by spraying with an insecticide.

282. The Banana borer weevil, prevalent throughout the area was responsible for unthriftiness in a number of fields and holdings. A certain measure of control was achieved by spraying growing trees with Aldrex and dusting planting material with Aldrin.

283. *Leaf Spot.*—Leaf Spot in banana is being controlled by periodic spraying.

284. *Co-operatives.*—There were eight farmers' clubs functioning during the year viz : Birchgrove, St. James and Upper Capitol, St.Clouds and Grand Bras, Crochu Peasants Association, Grand Bacolet Farmers' Club, St. John's Farmers' Club, Plaisance Farmers' Club and St. Andrew's Peasant Association ; of these only two shipped bananas co-operatively—Birchgrove and St. Clouds, the others are preparing to do the same early next year. A banana shed was erected at Birchgrove by the members of the club with material aid from the Grenada Banana Co-operative Society.

DEPARTMENT OF AGRICULTURE CARRIACOU.

Extension Service Annual Report—1957.

(By A. G. Branch, Senior Agricultural Assistant.)

285. *Weather Conditions.*—The total precipitation for the year under review was less than the previous year. Light showers were widely distributed during the first half of the year, but there was a brief drought during the latter part of the year with 75 parts of rainfall recorded in October. In the sixty-eight rainy days, the highest rainfall was recorded in July, 5.92 inches and the lowest .17 parts in March.

286. Rainfall recorded on Dumfries Estates :—

	1955	1956	1957
January	2.01	3.75	5.33
February.. ..	1.46	1.72	1.48
March	—	2.69	.17
April	—	4.00	3.90
May	2.20	2.09	1.55
June	4.85	5.10	5.71
July	5.60	7.22	5.92
August	3.14	5.42	4.99
September ..	7.34*	4.09	3.14
October	6.90	4.41	.75
November ..	14.39	8.42	5.84
December ..	3.33	2.55	4.62
Total ..	51.11	51.46	43.40

*Hurricane'Janet'.

Soil Conservation.

287. Serious attention was given to accelerate soil conservation practices during the wet months when plants grow rapidly, but the snag was obtaining vegetative planting material near the holdings on which work had to be done. It was a little expensive for farmers who had to pay transportation of the grass plants from nurseries far away from their holdings, this was a set back, as less advantage was taken of the wet months. During September, Apprentices from Grenada, assisted in the drive to implement the programme, but farmers were unable to plant barriers as rapidly as the contour lines were pegged out, and this was also hindered by the brief drought that existed in October. In November, it was too late to increase the rate of pla nting, although the weather was favourable. Farmers who are participating in the scheme received a total of $4.085.46 for work done based on $6.00 per acre. Estimates were submitted for special soil conservation needs, such things as gully control and opening nurseries in districts where obtaining vegetative material was a problem.

288. The following figures show the work done for the year under review :—

	No. of lines.	Grass barriers. down ft.	Grass barriers planted ft.	Stone barriers	Storm drain down	Storm Area opened	Area affected.
January		2,100	..	..	..	..	..
February		800	..	..	..	..	8 acres
March		700	..	..	..	1.002	..
April		675	..	..	..	..	5
May	28	7,088	3,965	..	..	1,275	13
June	45	16,377	15,163	..	..	..	12.66
July	103	41,631	28,733	..	..	1,053	12
August	112	26,335	22,185	..	..	..	72
September ..	269	69,636	33,177	2,280	2,155	300	311.50
October	34	4,500	4,500	3,220	..	..	40
November ..	23	7,110	4,460	1,930	..	..	9
December ..	6	3,900	..	..	..	..	..
	618	180,852	112,183	7,430	2,155	3,630	483.10
Dumfries ..	165	98,801	71,561	..	..	6,900	104.00
	783	279,653	184,744	7,430	2,155	10,530	587.10

Agriculture on the Island.

289. *Permanent Crops*:—(a) Peasants continued to ship their limes to the Grenada Lime Factory at economical prices for which they were very grateful and gave impetus to better field culture. Installations and replacements were completed on the two factories, but it only left time to process estates limes. Dumfries distilled 460 lbs. of lime oil in 23 distillations, averaging 20 lbs. of oil from its 250 gallon-kettle ; Craigston in 15 distillations 553 lbs. of lime oil was distilled averaging 36.86 lbs. of oil from its 500 gallon-kettle. Now that the factories operate efficiently peasants have a more confident approach to the improvement of their economy by planting more limes. There are twenty six (26) applications under the Long Term Loan Scheme to plant up approximately 330½ acres, and there are some peasants who are preparing fields and they are not participants of the Scheme but they would receive plants in the general distribution.

290. There are twenty-one (21) applications under the Long Term Loan Scheme to plant up approximately forty-nine (49) acres, and plants have been distributed to some of these farmers plus those who are not participants of the Scheme. It was our policy to supply participants of the Scheme plants first, but this was changed and plants were given to farmers who had the planting sites ready, and showed some enthusiasm to care and nurse their plants.

291. There is a small section of the community who is willing to switch over to the growing of Sea Island Cotton, if ploughing and furrowing would be done mechanically. One enthuiastic farmer obtained Sea Island V-135 seeds from St. Vincent for trials on his holding. The present perennial cotton crop is dwindling rapidly, and two of the factors responsible for the constant decrease are, firstly, less lands are worked annually and secondly, the shortage of labour. Growers petitioned His Excellency the Governor for a commission to investigate and make recommendation.

292. The following figures show the crop, ginning per centage and the number of persons delivering seed cotton to the ginnery for a six year period :—

	1952	1953	1954	1955	1956	1957
Seed Cotton ..	366,390	823,225	561,944	523,631	362,694	458,806
Lint Cotton ..	152,830	204,910	136,710	126,480	90,210	111,149
Bales Shipped	493	661	441	408	291	361
Seeds (tons) ..	208	273	183.72	174.50	116.60	150.58
Ginning ..	24	24.8	24.5	24.1	24.8	24.2
No. of persons	1,256	1,261	1,241	1,242	1,262	1,516

293. *Food Crops*.—(e) Corn is the most essential food grown, but production had been on the decline for the past four years and it has been causing the peasants to go to the shops more regularly for food supply. The sale of rice and flour has been increased together with the declining production of corn.

294. Peanut crop was satisfactory, and it was an incentive to plant extensive areas and more lands were covered in this crop than the previous year and good indications of a bumper crop were showing up to September, but the low rainfall in October affected pegging considerably. This crop continued to accelerate soil erosion widely in the Belmont and Belle Vue districts, and some attempts were made to urge on farmers strip cultivation and heavy mulching.

295. Extensive areas were covered in yams, but apparently weather conditions would be unkind to production.

296. More cassavas were planted, and it seems as if they are standing up to the rainfall. It is hoped that more planting material would be available to plant extensive areas. Two farine pans were erected to manufacture the roots into farine.

297. Very poor crop of pigeon peas was made. Besides weather conditions, parasol ants eat the flowers.

Livestock and Poultry.

298. Exports of livestock and poultry continued on the decline in cattle and small stock for the year under review. Cattle and small stock were exported to the French Island of Martinique, and poultry to Trinidad. The average value placed on a head of cattle was $100.00; Sheep $5.00; Goats $3.00 and fowl $1.00. During the year there were 121 cattle ; 104 sheep; 69 goats exported less than 1956, but fowls increased by 3,802 heads more.

The following figures show exports and value of livestock and poultry :—

	Cattle	Sheep	Goats	Fowls	Total Values
1956 ..	331	291	208	4,268	$ 39,447.00
1957 ..	210	187	139	7,070	$ 29,422.00

299. The Island continued to be free from notifiable diseases. Most of the cases are malnutrition brought about by the scarcity of good fodder. The practice of allowing animals to roam over the island during the dry months was less prevelant than last year. There were more farmers' animals kept on stake than in previous years for making pen manure, and it is hoped that cattle would be housed in 1958.

300. Besides the two Nelthropp bulls standing at Limlair for the improvement of the cattle population, an additional bull is stationed at Dumfries, and farmers have taken their cows to him and thirteen cows are in calf.

301. *Pastures Ponds and Drains.*—Repairs to fences, cleaning drains, and removing accumlated dung were carried out. Small enclosures were prepared in the Brunswick and Belair pasture; the Brunswick enclosure was planted in Pangola grass. The Pangola grass in the Limlair pasture was extended and it is hoped that this pasture would be covered in 1958. More emphasis has to be made on pasture improvement and grass land management if the livestock population is to be increased for contributing more to the economy of the island. There is urgency for farmers to improve their pastures and practice a system of rotation grazing. A limited number of animals entered the pastures and a small fee collected per head, and for the year under review $204.86 was collected and paid in the Treasury.

General.

302. *Planting Material Distributed.*—The distribution of planting material was a stimulus to the rehabilitation and development of the island. There are some plants that are thriving and would reach production early if the plots are protected from stray animals. A fair amount of plants were received and distribution was made to estates and peasants :

Tall coconuts received	..	9,085
Dwarf Coconut „	..	1,550
Orange plants „	..	40
Grapefruit plants		32
Coffee „	..	25

303. *Forest Reserve.*—Trees have recovered and the canopy is dense and secondary growth has overcrowded mahogany saplings. The Acting Forest Supervisor visited and submitted his recommendations.

304. *School Gardens.*—Four schools in Carriacou and one in Petit Martinique made some efforts to reinstate garden activities. The school garden Instructor supplied fencing materials to the four schools in Carriacou, and planting materials to all the schools. There was no active work in the Harvey Vale School before the appointment of the present Headmaster, who is very keen. He has made application for fencing materials to enclose the garden in 1958.

305. *Land Settlement and Development Board.*—The members are taking a more active part in the implementation of the programme to develop Lauriston and Dumfries Estates as the property recently was vested in the Board. Capital Development was financed by funds from Colonial Development and Welfare, and rehabilitation expenditure was met by loans from Agricultural Rehabilitation Loan Scheme.

306. During the year 20½ acres were planted in coconuts, and 6½ acres more to are be planted at Lauriston Estate in 1958.

307. Lime trees were manured and brought back in production, and in spite of the late completion of the installation of the boiler and modifications to the factory at Dumfries, 460 lbs of lime oil was distilled.

308. Coconut fields were cleared and more coconuts were harvested than the previous year.

309. Permanent and secondary windbreaks were planted at 300 feet apart horizontally and contour wise but they were hard hit by the drought during the latter part of the year.

310. Soil Conservation affecting approximately 104 acres in progress.

311. More gardens for the production of food crops and cotton were given to selected gardeners, these gardeners are being encouraged in group farming.

312. *Land Settlement.*—The Limlair Land Settlement is the only settlement not fully paid up for as yet. Indentures were prepared for the allottees who completed payment and submitted to the Land Settlement Officer. A sum of $100.00 was collected as annuity payments.

313. *Agricultural Rehabilitation Committee.*—Meetings were held to scrutinize applications for loans and soil conservation grants. Nine applications for Long Term and thirty for Short Term Loan ; and one hundred and fifty-three applications for soil conservation grants were recommended by the area committee and approved by C.A.R.C. There was a little more interest in the use of chemical fertilizer in conjunction with organic manures. 10,511 lbs. were sold.

314. *Oysters Beds.*—If controlled by private enterprise under a lease agreement they would bring more revenue to Government.

315. *Water Supply.*—Mr. P. H. Martin-Kaye, Geologist of the Windward Islands, carried out a geological survey, and Mr. J. Wilson, a drilling engineer was on the island in connection with underground water supply. All these geological surveys revealed the same story in E. Lehner's report when he visited the island from 1st to 15th March, 1935.

316. *Land Capability Survey.*—A survey was made and a soil map which includes all classes of land in Carriacou was prepared by the Land Use Officer. The extension officers carry a copy of the guide sheet for planning peasants' holdings. The Extension Officers are insisting on proper land utilization.

Advisory and Visits.

317. Officers made regular visits to small holdings and estates, familiarizing themselves with the problems of each holding and offered assistance in all aspects of new methods and techniques to make the holding profitable. Inspections were made on the progress of rehabilitation and soil conservation work for the farmers to receive advances on work done. Advisory work on Soil Conservation; land use; livestock rearing; pasture improvement by planting pangola grass and rotation grazing; planting coconuts and limes; making compost and the application of organic manures in conjunction with chemical fertilizers were accepted by the farmers. Discussions were held on co-operative marketing with reference to cotton and peanuts.

Other Activities.

318. Talks were given on soil conservation; pig rearing; cotton cultivation; compost and pen manure. Farmers visited Limlair and Dumfries Estate.

319. Talks were given by the Acting Supervisor of Forest, the Registrar of Co-operatives and the Co-operative Officer.

320. Twenty-five farmers were selected to work as Key Farmers, they had to demonstrate a better system of pig rearing; poultry rearing; cultivation of Pangola grass; cotton; corn; yam; and peanut; N.P.K. fertilizers was applied to these crops, and the farmer kept a record of yields and cost of production. Key Farmers in the southern districts visited each Key Farmer holding, and the farmer discussed his project with his guests.

321. *Plant Protection.*—Poison baits were distributed for controlling rats and good results were reported. Parasol ants were controlled by applying 40-1 mixture of Dieldrex in the nests of the ants.

Visitors.

322. His Excellency the Acting Governor, H. L. Lindo, C.M.G., His Honour the Administrator, J. M. Lloyd and Mrs. Lloyd, Honourable F. A. Phillips, G. A. Southwell, Acting Superintendent of Agriculture, D. A. Perryman, Agronomist, J. M. Cocozza, Veterinary Officer, E. W. John, Livestock Officer, and Dr. French.

Miscellaneous.

323. *Staff Notes.*—A. C. Branch, was appointed Senior Agricultural Assistant. R. F. Edwards Senior Agricultural Instructor was transferred to Ashenden Cocoa Station, and L. M. Christopher was appointed acting Senior Agricultural Instructor. E. R. Dominique, Junior Agricultural Instructor, left the Island to attend a two year course at the Eastern Caribbean Institute in Trinidad. L. Sayers was appointed to replace Dominique but appointment was not taken up by Sayers due to illness.

Staff Members.

A. C. Branch,	..	Senior Agricultural Assistant,
L. M. Christopher,	..	Acting Senior Agricultural Instructor,
Roy Clara,	..	Temporary Junior Agricultural Instructor,
Sydney Augustine,	..	Land Settlement Ranger,
Tempest Paterson,	..	„ „ „
Leroy Noel,	..	„ „ „

Clerical Staff.

Rudolph Roberts.

District—Carriacou North.

(By L. M. Christopher).

Agriculture in the Area.

324. (*a*) *Weather Conditions.*—The weather conditions for the period under review were not ideally favourable for agricultural crops. Although the rainfall for the year was not much lower than that of the previous year, the yields from agricultural crops were below that of 1956.

325. The rainfall for the year was 35.75 inches as compared to 37.35 inches the previous year. The lowest fall recorded in 1956 was 1.00 inch in February as compared to .30 parts in March of 1957.

Notes on Crops in the District.

326. *Cotton.*—Taking into consideration the age of the fields the yields from this crop seems to be rather satisfactory. Much better results can be obtained if the fields are replanted, say every three or four years. Since cotton is the only commercial crop grown in Carriacou to any extent, I feel that something should be done to improve the quality of cotton in the island.

327. *Yams.*—This was not a favourable year for this crop. Germination was very irregular due to the weather conditions, and as a result a poor crop is anticipated. The varieties most frequently planted are—White Lisbon, Moonshine and Fancy Yams.

328. Due to the failure of this crop, planting materials will have to come from some other source for the forthcoming season.

329. *Coconuts.*—The yield from this crop cannot be termed excellent, but a fair number of nuts can be obtained from the bearing trees in the area. The amount produced is insufficient for local consumption.

330. There is a drive on to increase the acreage under cultivation, and for this reason the Department of Agriculture has distributed to farmers in the area over 2,000 plants, most of which are making rapid growth.

331. *Cassava.*—Much of this crop is not grown in this area, and wherever it is grown one will find the white sweet variety which is preferred by the farmers.

322. *Yams.*—There were two experiments laid down with white lisbon yams. They were mulched vs. no mulch and Staked vs. un-Staked. In this experiment the growth of the yams were very irregular due to weather conditions.

323. The results of this experiment will also be published in the next annual report.

324. (*d*) *Non-experimental work.*—The following crops were planted for both revenue and stock feed :—

Corn, Pigeon Peas, Sweet Potatoes, and Yams. Cotton was planted solely for revenue. Besides there were few other crops such as Groundnuts, Bluggoes and Black-eye peas.

325. (*d*) *Plant Introduction.*—Two of the newly introduced grasses have stood up well to the conditions in this area. They are two varieties of Millet from which seeds are collected for the extension of the plot.

326. (*e*) *Livestock.*—The livestock on the station were maintained in perfect health throughout the year.

The following animals were born on the station during the year.—

One (1) bull calf,
One (1) heifer calf,
Four (4) male lambs,
One (1) female lamb.

The deaths recorded were as follows :—

Two (2) turkeys,
One (1) Black-belly ram,
One (1) R.I.R. hen.

327. The stud animals were given quite a bit of work during the year, but as they were kept in good serviceable condition they were able to cope with the heavy work.

Hereunder is a detail of the services for both 1957& 1956.

Bulls :

Gersham .. 64 services in 1957, 69 in 1956.
Charlie .. 84 services in 1957, 42 in 1956.
Large Black ' John' 5 services in 1957.

Rams :(Whiltshire Horn 1 and South African Woolless 3).

328. This Large Black boar was first put into service in September. He replaced the older one which was transferred to Westerhall sometime in April.

329. *Corn.*—This was not a successful year for this crop due to unfavourable weather conditions which resulted in very poor yield.

330. *Bluggoes.*—Farmers in this area are becoming more interested in this crop as a local food. Consequently, many of them are seeking planting materials to extend their plots. There is one draw back to the progress of this crop, and that is the habit of letting animals at large during the dry season. Some of the peasants have overcome that by enclosing their fields with barbed wire fencing.

331. *Limes.*—The trees have made very good recovery, and have borne well, Many peasants in the area are not growing limes, and the only recognised lime plantation in that area is that of Craigston Estate. The crop for the year was a very satisfactory one, and the price per tin of limes was 50 cents.

332. *Pigeon Peas.*—This crop was a complete failure, and two factors have contributed to that failure—continued high winds and destruction by Parasol ants.

333. *Livestock and Poultry.*—For the period under review there have been no reports of any notifiable diseases. There were a few minor ailments in all classes of livestock, but generally speaking, livestock in the area were maintained in good health.

There is a great improvement in the type of cattle in the area. This is the result of the advantage taken by the farmers of the use of the Nelthropp bull which is available on the Limlair Agricultural Station.

334. The poultry situation remains the same, as farmers seemed to be prejudice against the dual purpose breeds of poultry which, I think, is ideally suited to Carriacou conditions.

335. The large stocks are exported to Martinique where they claim to get a good market. The poultry are exported to Trinidad where they receive 84 cents per lb. live weight. The local price is 48 or 50 cents per lb.

Work on Agricultural Station.

336. (*a*) *Experimental Work.*—The following work was done on experiments :

Cotton.—There were two plots established for the purpose of determining the yields in pure stand and interplanted cotton and comparing them. There was no treatment given to any of the plots, but the planting distances vary because of the space required for planting corn and peas.

The result of this experiment will be given in the next annual report.

337. (*g*) *Planting Materials.*—The farmers in the area are dependent upon the Agricultural Station to supply all their planting materials, and as a result large quantities of planting materials have been distributed. The items which were most distributed were potato slips, cassava sticks and bluggoes. A large number of coconut plants were also distributed.

338. (*h*) *General.*—About half acre has been planted in Pangola grass from which it is hoped to get plants for extension.

339. During the latter part of the year all the livestock buildings which were blown down by the hurricane were rebuilt.

340. The total amount of revenue collected on the station during the year was $1,304.48.

341. Egg sales for the year were as follows :

Collections	2,337
Sales for table	2,089
Sales for hatching ..	217
Broken	1
Balance from previous year	3

Advisory and Extension Work.

342. *Soil Conservation.*—Throughout the year there had been a steady drive in the field of soil conservation, but most of the work has been done on establishment of grass barriers. For the period under review there were 47,912 feet of grass barriers laid down on 177 feet storm drain. Some of the grass barriers died as a result of the drought while others were destroyed by animals.

343. *Advisory Work.*—From the time I took over from Mr. Edwards in October, I found he had the following key farmers :—

Esau Fleary, Petit Carenage,, ,
Waldron Fleary, ,,
Whitfield Sylvester, Limlair,
Egbert Phillip, Meldrum,
F. B. Paterson, Belvidere,
Lloyd Stafford, Boggles,
Maud Clouden ,,

344. The above-mentioned people are connected with crops. Special mention can be made to Lloyd Stafford who is very co-operative.

345. The following are connected with some form of livestock or other.

Mrs. Rebecca Joseph, Limlair, sheep rearing.
Mrs. Agatha Cox, Dover, poultry rearing.
Mr. Joseph Shade, Boggles, pig rearing.
Mr. R. W. Quashie, Limlair, pig rearing.
Mr. Prince Cudjoe, Limlair, poultry rearing.

346. These farmers have been paid very frequent visits, and advised on the problems confronting them. In addition many other farmers were visited and advised.

347. *Rehabilitation Work.*—During the year there were seven (7) applications for Short Term Loans which were approved. These loans total $1,275.50. There were also four applications for Long Term Loans. The amount involved was $2,400.00.

All Long Term loans are for rehabilitation of permanent crops such as limes and coconuts. A large number of coconuts have been distributed to farmers already, but no lime plants have been distributed so far.

ANNUAL (VETERINARY) REPORT.

(By J. Cocozza, M.R.C.V.S., M.R.S.H., Veterinary Officer).

348. *Notifiable Diseases.*—A significant rise in the outbreak of rabies characterised the year. Animals involved :—

Dogs ..	19
Cows ..	1
Equines	3
Pigs ..	1

The majority of cases occurred along the Western Coast area and Rabies Control was the subject of special effort in this area.

Previous outbreaks of rabies had been limited to cases in Cows and Equines and the danger to the human population was therefore small. Now that the incidence of rabies appeared to have taken the form of a chain reaction among dogs, the danger to human life was now correspondingly greater. The first measure of control therefore was aimed at a swift and sudden reduction in the stray dog population and this proved effective in killing off many dogs that had already been exposed to rabies and in preventing the already rabid dogs from coming into contact with potential sources of further infection.

349. During the course of the year, 3,608 dogs were thus destroyed. The remainder of the dog population which escaped slaughter appeared to be under control of their owners and therefore did not constitute the danger of stray dog population.

350. Consequent on this reduction and the virtual disapperance of the stray dog population, the number of rabies cases diminished, and the number of persons reporting to the Medical Department for anti-rabies treatment as a result of definite rabies exposures fell rapidly.

The diagnosis of rabies cases in dogs was carried out in Grenada by demonstration of Negri Bodies in the brains of the affected animals, with confirmation of rabies in the more serious cases by the W.H.O. Consultant Dr. Aurelio Malaga Alba of Mexico and by the Veterinary Investigation Laboratory (Dr. Butcher) Trinidad.

351. Further Control was exercised by large scale mongoose poisoning in the Western Coast area. A team of 30 men were thus employed in spreading bait for mongoose, using a fish bait with Thallium Sulphate. Specimen traps were issued throughout the area in conjunciton with the Rat Control Organization. While the results of the poisoning programme were excellent, great difficulty was experienced in covering the rougher mountain areas. Vaccination of dogs against rabies was carried out in March but the response of the public was poor, only 1,200 dogs being vaccinated.

352. Future control of rabies in dogs appears to depend on a firm licensing of dogs throughout the island, with vaccination and registration by earmarking as a condition of licensing.

No other notifiable diseases occurred in Grenada throughout the year.

Other Diseases.

353. *Distemper.—Dogs.*—There has been an increase in the cases of distemper, concommittant with the increase in the dog population. Most cases observed are of the exanthematous type.

354. *Tetanus.—Horses.*—A slight increase in the frequency of tetanus in Horses has been observed this year. No explanation was available in eight (8) cases and failure to respond to anti-tetanus serum characterised four (4) cases which showed advanced symptoms of the disease.

355. *Masitis.*—Usually of acute type, responding well to penicillin and the proprietary Hibitane intramammary tubes. An average of 10 per month was met with in cows and three per month in goats.

356. *Obstetrics.* Most calls for Veterinary Assistance were in this field, and were concerned with malpresentation, difficult parturition, monstrosities, etc.

Castrations, impactions and other minor veterinary procedures were attended to throughout the year.

357. *Veterinary Education.*—The Veterinary Officer gave monthly radio talks over the Windward Islands Broadcasting Service on the care of animals.

358. In January 1956 the Film "Rabies can be controlled" was shown in the Market Square and the Veterinary Officer as part of the Visual Aid programme addressed the Market audience.

360. The Veterinary Officer proceeded to Caracas in March/April 1957 to attend a Seminar on Rabies held by the W.H.O./P.A.S.B. for instruction in the techniques of rabies diagnosis and vaccine preparation.

Livestock.

(Report by Ernest W. John, Dip. Agric. (O.A.C.)

361. *Dairy Cattle.*—The cow Solitaire died on the 10th April, due to negligence on the part of the Stockman.

362. The herd maintained good health. Six (6) calves were born: All of them were heifers.

363. The cow Pollo was sold She proved to be a difficult breeder.

364. Matilda and Verina arrived from Mt. Moritz Agricultural Station in August. Quail's Sally was transferred from Westerhall to Mt. Moritz. Six (6) Steers were sold to the Cocoa Improvement Scheme.

365. The following table will show the herd statistics for 1957 :—

	Bulls.			Cows	Heifers	Steers	Calves.		Totals.
	Jerseys	Red Poll	Nelthropp				M.	F.	
On hand 1st January ..	2	1	2	7	—	4	4	5	25
Increases :									
By Birth	—	—	—	—	—	—		6	6
„ Purchase	—	—	—	—	—	—	—		—
„ Transfers	—	—	—	2		—	—		2
„ Reclassified	2	—	—	2	2	3	—		9
Total	4	1	2	11	2	7	4	11	42

	Bulls						Calves		
	Jerseys	Red Poll	Neithropp	Cows	Heifers	Steers	M.	F.	Totals.
Decreases :									
By Death	—	—	—	1	—	—	—		1
„ Sales	—	—	—	1	—	—	—		1
„ Transfers	1	—	2	1	—	—	—		4
„ Reclassified	—	—	—	—	2	6	3	2	13
Total ..	1	—	2	3	2	6	3	2	19
Balance on hand 31st December	3	1	—	8	—	1	1	9	23

366. Of the two (2) Neltropp bulls, one was transferred to Dumfries, Carriacou, and the other to the Maran stud centre.

Cows were milked twice daily.

367. The milk production and distribution from 1952 to 1957 were as follows :—

Year.	Total production Qts.	Converted into butter Qts.	Fed to Calves Qts.	Fed to Pigs Qts.	Fed to Goats Qts.	Sold Qts.	Spilt Qts.
1952 ..	9,018.00	7,893.50	584.00	56.50	—	482.50	1.50
1953 ..	20,012.40	9,553.85	1,632.30	72.00	—	753.65	.60
1954 ..	13,287.35	4,958.95	7,041.75	58.00	68.0	3,110.40	50.25
1955 ..	6,882.50	2,735.70	2,716.35	26.10	24.2	1,358.25	21.90
1956 ..	5,187.10	3,506.00	1,082.40	17.70	1.6	577.40	2.00
1957 ..	7,855.70	4,551.60	1,733.70	14.90	—	1,554.40	1.10

368. Butter production and disposal from 1952 to 1957 were as follows :—

Year	Production lbs.	Sales lbs.	Supplies to Hospitals lbs.	Free Samples lbs.	Spoilt lbs.	Balance on hand December, 31st lbs.
1952 ..	B'F from					
	1951— 95/8	4591/8	380	5	2	$4\frac{3}{4}$
	1952— 842					
	8515/8					
1953 ..	B'F from					
	1952— $4\frac{3}{4}$					
	1953— 1055					
	$1059\frac{3}{4}$	519	537	$1\frac{3}{4}$	—	2
1954 ..	B'F from					
	1953— 2					
	1954— 383					
	385	$334\frac{1}{2}$	$46\frac{1}{2}$	—	2	2
1955 ..	B'F from					
	1954— 2					
	1955— $208\frac{3}{4}$					
	$210\frac{3}{4}$	100	$104\frac{3}{4}$	—	—	6
1956 ..	B'F from					
	1955— 6					
	1956— $280\frac{1}{2}$					
	$286\frac{1}{2}$	$85\frac{3}{4}$	$192\frac{3}{4}$	$\frac{1}{2}$	—	$1\frac{1}{4}$
1957 ..	B'F from					
	1956— $1\frac{1}{4}$					
	1957— $428\frac{1}{4}$					
	$429\frac{1}{2}$	$107\frac{3}{4}$	$306\frac{1}{4}$	$2\frac{1}{2}$	13	—

369. Butter was sold at one dollar and ten cents per lb. ($1.10) The revenue from sale of butter at Westerhall to the Colony and Mental Hospital was $515.52.

370. The total sum collected under this head was as follows :—

	$ c.
Sale of milk ..	279.53
„ „ Butter ..	375.70
„ „ Steers ..	360.00
„ „ Bulls ..	240.00
„ „ Cows ..	150.00
Grinding of Corn ..	31.38
	1,436.61

Pigs.

371. Large Black pigs continued to be the only breed on the Station. One Sow got her leg fractured on the 19th April, and she was sold the said day.

372. Three sows were sick during the year under review from Mastitis, milk fever and vaginitis respectively. They were attended to by the Veterinary Officer.

373. Aenemia in piglets was common due to the fact that the piglets were reared on concrete floors. They were successfully treated with ferrous sulphate. No deaths occured from the attacks.

374. One young boar was transferred to the Hope Stud Centre and another to the Limlair Agricultural Station, Carriacou.

375. A young boar which weighed 182 lbs in 22 weeks was sold to Honourable W. Eric Copland.

376. The following table shows the year's transaction :—

	Boars	Sows	Gilts	Barrows	Piglets	Total
Balance on hand 1st January, 1957 ..	3	10	4	—	15	32
Increases by Birth ..	—	—	—	—	188	188
„ „ purchases	—	—	—	—	—	—
„ „ transfers ..	2	—	—	1	—	3
„ „ reclassification	—	4	2	—	—	6
Total	5	14	6	1	203	229
Decreases by Death ..	—	—	—	—	21	21
„ „ Sales ..	3	2	—	—	136	141
„ „ transfers ..	—	—	—	—	—	—
„ „ reclassification	—	—	4	—	4	8
	3	2	4	—	161	170
Balance 31st Dec. 1957 ..	2	12	2	1	42	59

377. The following table will show the number of litters with the average per litter, the death rate per litter, average number weaned per litter, the average weaning weight per litter and the highest individual weaning weight at eight weeks, for 1957 and 1958.

	1957 lbs.	1958 lbs.
No. of litters	14.40	24.00
Average per litter	8.00	8.20
Deaths per litter	0.29	1.00
Average No. weaned per litter ..	7.71	7.20
Average weaning weight ..	36.65	32.60
Highest individual birth weight	5.00	5.25
Highest individual weight at 8 wks.	56.00	52.00

378. The revenue collected from pigs was as follows :—

	$ c.
Piglets	1,298.00
Boars	54.60
Gilts	78.90
Sows	130.80
Barrows	—
Stags	161.00
Maintenance of Sows / Service of Boars ..	36.32
Total ..	1,759.62

Goats.

379. Four (4) British Alpine ewes were kept. Two of these were imported from Barbados in December, 1957. They were kept mainly to produce studs for the various stud centres in Grenada and Carriacou.

Sheep.

380. Three (3) ewes were kept for the purpose of producing studs for the stud centres.

Stud Centre.

381. Two (2) boars, two (2) bucks, one British Alpine and the other Anglo Nubian, and one (1) ram were kept. The cost of each service was sixty cents (60c). The services of the various classes of studs at Westerhall from 1951 to 1957 were as follows :—

Year	Boars	Rams	Bucks	Jack	Total.
1951	57	9	4	—	77
1952	58	15	15	7	88
1953	54	7	25	—	89
1954	45	6	36	3	91
1955	35	10	26	1	73
1956	33	7	21	2	61
1957	79	5	34	—	118

Pastures and Fodder Grasses.

382. Two pastures of approximately six (6) acres in area were planted in Pangola grass (Digitaria decubens). We had a labour problem late in the year, and we were grateful to Mr. Daniel Mitchell of Mirabeau for the free use of his bush hog and Mr. R. deSousa of Bailes Bacolet for the loan of his tractor to operate the bush hog and for ploughing purposes.

383. Pangola grass plants (Dititaria decubens) were given for the establishment of nurseries to the following farmers :—Messrs. R. deSousa, K. Mancini, C. Ferguson, W. A. Branch, E. Copland, E. Kent, T. A. Gilbert, G. Brathwaite and L. Commissiong.

384. The fodder grasses like Guatamala (Tripsacum laxum) and Canes (Saccharum sinense) were cut and ensiled in the month of October.

385. The Guinea grass (Panicum maximum) pastures were renovated. A complete fertilizer 8-10-10 was applied at the rate of 600 lbs. per acre to all the Guinea Grass (Panicum maximum) pastures.

Miscellaneous.

386. A short course of one week's duration in Animal Husbandry was given to all Junior Instructors of the Department of Agriculture.

387. A three (3) months' course in Animal Husbandry was conducted for ten (10) Agricultural Apprentices.

388. The Livestock activities on the station were conducted by Mr. Ernest W. John, Livestock Officer, assisted by Messrs Clarence Wyse, Foreman, Emmanuel Jacob and Maurice Greenidge. The Clerical work was done by Mrs. Ernest John.

Poultry Multiplication Scheme.

(Summary by Ernest W. John, Associate O.A.C.)

389. Two Poultry attendants were attached to the Scheme. They were Misses Theodora Gilbert, and Elaine Duncan. The clerical work was done by Mrs. Ernest John.

390. The two (2) breeds kept were Rhode Island, Red and Barred Plymouth Rock.

391. During the year under review we had many attacks of coccidiosis in the brooder at the Botanic Station and Westerhall. Sulphamezathine (16% Solution) was used with satisfactory results.

392. The following table will give a summary of flock transaction at Westerhall for the year :—

	Roosters	Hens	Pullets	Cockerels	Chicks	Totals.
Balance on hand 1st January, 1957 ..	23	11	185	5	141	365
Increases by hatches ..	—	—	—	—	—	—
„ „ purchases ..	—	—	—	—	—	—
„ „ transfers ..	—	—	—	—	185	185
„ „ reclassified	8	53	41	7	—	109
Total increases ..	31	64	226	12	326	659
Decreases by death ..	4	4	10	—	67	85
„ „ sales ..	8	8	115	—	131	262
„ „ transfers ..	—	—	—	—	—	—
„ „ reclassified	—	—	53	8	48	109
Total decreases : ..	12	12	178	8	246	456
Balance on hand 31st. December, 1957 ..	19	54	46	4	80	203

Egg Production and Disposal.

393. The difference between production and disposal accounted for as follows :—

Production.

On hand 1st January, 1957	328
Amount layed	24,468
Total	24,796

Disposals.

Eggs Incubated	9,405
Artificial Insemination ..	211
Eggs broken	650
Sales	14,309
On hand 31st December, 1957	221
Total	24,796

394. 262 of the eggs listed under 'broken' column were sold as cracked eggs at 6 cents each.

Eggs Incubated.

395. All incubation was done at the Botanic Station in an incubator produced by the Secura Incubator Coy. England.

396. Of the 9,436 eggs sent from Westerhall to be incubated 31 were returned to the Agricultural Office, to be sold as table eggs.

397. The incubation period extended from January 4th., 1957 to November, 29th., 1957. The Department of Agriculture had embarked upon a plan of helping peasant farmers by hatching their eggs for them. Diseases eventually set in and had accounted for the high death rate listed under the table showing chick transactions. Incubation was stopped for a while. The incubator was disinfected.

398. The results of the eggs incubated for 1956 and 1957 were as follows :—

	1956	1957
Westerhall	10,204	9,910
Ontario Agricultural College	180	—
Total	10,384	9,910
Chicks hatched ..	5,473	5,534
Infertile eggs	2,112	2,192
Dead germs	2,701	2,103
Eggs broken	98	81
Total	10,384	9,910

	1956	1957
Chicks hatched of total number of eggs incubated	53	55.8%
Dead germs	26	21.2%
Infertile eggs	20	22.1%
Eggs broken	1	.9%
	100	100%
Percentage of chicks hatched from total number of fertile eggs	66.2	71.7%

399. Five hundred and five eggs listed under 'eggs incubated' were placed into the incubator late December, 1956.

400. The following will show the transactions of chicks hatched and placed in the brooder at the Botanic Station :—

Balance on hand ..	417
Production in brooder ..	5,328
Total ..	5,745
Sales	4,541
Deaths	982
Transfers to Agricultural Stations	193
Balance 31st December	29
Total	5,745

401. Of the 193 chicks listed under transfer column above, 118 chicks went to the Westerhall Agricultural Station and 75 chicks to the Tivoli Agricultural Station.

402. The chicks produced by the Department, as well as the amounts imported into the Colony from 1953 to 1957 were as follows :—

	1. Department's Production and Sales.			2. Importations.				——
Year	Prod. (a)	Sales (b)	Agric. Station (c)	Trinidad	Canada	U.S.A.	Barbados	Total for 1 (b) 1 (c) & 2.
1953	8,950	7,480	276	—	2,972	5	12	10,745
1954	3,417	2,366	169	913	2,236	100	—	5,783
1955	805	557	136	—	1,750	—	—	2,443
1956	5,473	3,804	559	—	2,575	700	—	7,638
1957	5,328	4,541	193	—	—	—	—	—

403. The importation figures were obtained from the Report on Livestock Importation into the Colony, as compiled by the Customs Department. The Importation figures for 1957 were not available at the time this report was written.

404. The following table will show production, revenue, expenditure, farm income, etc., from 1953 to 1957 :—

Year.	Chicks prod.	Chicks sold.	Chicks transf. to stns.	REVENUE				Amount spent from Estimates.	Farm Income.
				Chicks & Poults.	Eggs.	Culls. etc.	Total.		
				$. c.	$. c.	$. c.	$. c.	$. c.	$. c.
1953	8,950	7,480	276	3,053.56	1,391.63	187.95	4,633.14	3,312.50	1,320.64
1954	3,417	2,366	169	1,010.40	1,135.92	214.20	2,360.52	1,244.00	1,116.52
1955	805	557	136	222.80	613.00	241.71	1,077.51	1,952.80	875.29
1956	5,473	3,804	559	1,606.20	355.44	720.76	2,682.40	2,410.10	272.30
1957	5,328	4,541	193	2,387.75	1,680.59	722.69	4,791.03	2,197.79	2,593.24

405. The expenditure and revenue figures were checked with the accounting branch, Treasury Department, and found correct and in order.

Turkeys.

406. The flock at the beginning of the year consisted of three (3) toms and ten (10) hens.

407. The following table will show flock transactions for the year under review :—

	Toms	Hens.	Poults.	Total.
On hand 1st January '57	3	10	—	13
Increases by hatches	—	—	—	—
„ „ purchases	—	—	—	—
„ „ transfers	—	—	6	6
„ „ reclassifi.	1	3	—	4
Total ..	4	13	6	23
Decreases by death	—	1	2	3
„ „ sales	2	3	—	5
„ „ transfers	—	—	—	—
„ „ reclassifi.	—	—	4	4
Total ..	2	4	6	12
Balance on hand 31st December, 1957	2	9	—	11

408. The number of eggs layed was 339. Of that number 335 were incubated and 4 were broken. The results of the eggs incubated were as follows :—

Eggs Incubated ..	335
Poults Hatched ..	148
Dead Germs ..	117
Infertile Eggs ..	66
Eggs Broken ..	4
Total	335

409. Eighteen (18) poults died in the incubator. The following table will show poult transactions for the year under review :—

Poults in brooder ..	130
Sales	93
Deaths ..	31
Transfers	6
Total ..	160

410. The revenue collected under the Scheme was as follows :—

	$ c.
Sale of culls ..	568.91
„ „ chicks ..	2,271.50
„ „ Eggs ..	1,680.59
„ „ poults ..	116.25
„ „ turkeys ..	127.60
„ „ feed bags	26.16
Total ..	4,791.03

Livestock Extension.

(By Ernest W. John, Assoc. O.A.C.)

411. *Poultry.*—Keen interest was shown in the production of poultry products for the home market

412. The firms which imported day old chicks from the United States experienced some difficulties in getting the chicks to Grenada. The Air Lines were not willing to convey them.

413. The Grenada Poultry Club imported feed through Messrs. O. D. Brisbane & Sons for its members, and it resulted in a substantial saving to members on a bag of feed, when compared with prices from other firms engaged in the feed business.

414. Coccidiosis had been common, it resulted in severe losses to the farmers who were just getting into the farming business, and whose conditions left much to be desired.

415. For one term the pupils of the St. George's R.C. Senior School had embarked up on the project of raising broilers on the compound. Besides the knowledge gained from the general care and management of the birds, they also realized a small profit from the project.

416. The price for live chickens varied from sixty-cents to one dollar per lb. From January to June, 1957 15,600 lbs. of dressed chicken valued at $9,378.00 and 3,500 dozens of eggs valued at $1,596.00 were imported from the United States. These figures were obtained from the statistical branch of the Treasury Department.

417. *Cattle.*—The production of this class of stock had increased slightly, but the producers were skeptical as regards increasing production due to the absence of a lucrative market.

418. Tick infestation had been severe, consequently, spraying demonstrations were given to the Junior Agricultural Instructors in the livestock areas in order to enable them to attend to the constant request for spraying of cows severely infested with ticks. Both Cooper's Dip and Gamatox were used with satisfactory results.

419. The dry season had been very severe on the Southern side of the island, and caused a great deal of worry to the farmers engaged in beef production. Mr. John Branch of True Blue Estate lost 22 head of cattle due to the drought.

420. 106 cows and calves were dewormed with phenothiazine and 26 bull calves castrated for peasant farmers.

421. Mr. Lenox Slinger who was engaged in the fluid milk business, imported a large pasteurizer from the United States. He then sold pastaurised milk to the public. He was granted pioneer status by the Government.

422. *Sheep.*—Production was rapidly on the increase. The death rate among lambs was high and farmers were advised on the ways and means of reducing it. Stomach worms infestation was severe throughout the island. 202 sheep were dewormed with phenothiazine for peasant farmers, and 45 male lambs were castrated.

423. Mr. John Branch imported a Suffolk Ram from England. It succumbed later in the year from an attack of pneumonia.

424. Two Percheron ewes and one ram of the same breed were brought to Grenada for breeding purposes by Mr. G. Brathwaite from the island of Antigua.

425. *Goats.*—The demand for this class of stock had been greater than the available supply consequently high prices were being paid for milch goats. Farmers were making efforts to import ewes from Barbados.

426. *Pigs.*—We note a slight change for the better in the feeding and management of pigs during the year. After many discussions with the Livestock Officer, farmers had begun to feed more concentrates to their pigs, and they were highly satisfied with the results. There was a great demand for weaner pigs. The price per weaner varied from eight to fifteen dollars.

427. Hog production was rapidly on the increase. Farmers like Messrs. R. deSousa and C. N. Reece who were already in the business extended their piggeries. Quite a number of farmers throughout the island were getting into the weaner business on a larger scale than they had done in the past in order to cope with the demand.

428. Large Black, Duroc Jersey and crosses between the two breeds were most common.

429. *Pasturers and Fodder Grasses.*—Farmers were becoming more and more conscious of the dire need for good pastures cultivated with palatable, better yielding grasses, and with such grasses as will show a reasonable amount of growth during the dry season as experienced in all tropical regions. Farmers were turning their attention to Pangola grass (Digitaria decubens) to meet this need, with a good measure of satisfaction. Planting material was obtained from the Westerhall Agricultural Station, where that grass had shown great promise as a good grazing grass capable of meeting the needs of the farmers.

430. Guatamala grass (Tripsacum laxum) was the most desirable soiling grass. Production of this type of grass had been rapidly increasing.

431. Elephant grass (Pennisetum purpureum) was used as a soiling grass. Its production was rapidly on the wane. Gautamala grass (Tripsacum laxum) was replacing it.

432. The planting of suitable leafy varieties of sugar cane (Saccharum sinense) as a soiling crop was becoming popular.

433. Interest had not been shown in Guinea Grass (Panicum maximum) as a soiling or grazing grass with the exception of the Westerhall Agricultural Station.

Marketing Organization Report 1957.

(By Joseph Wilson, Marketing Officer).

434. *Food Crop Supplies.*—Food crop production during this year showed a clearly marked improvement over that of 1956. Supplies were back to normal in most items, and there was no necessity for the large scale importations from St. Vincent and other islands as obtained in 1955-56.

435. All accumulations of yams, corn and peas bought by the Marketing Organization during the reaping season, were sold in the off season as food and planting material.

436. *Poultry Feed Supplies.*—The demand for poultry feed has been steady; the sale of all purpose poultry feed was less in 1957 than in 1956, but the sale of corn for poultry feed increased.

437. *Food Storage Centre Activities.*—St. George's continues to be the active Centre and has been responsible for almost all of the buying, storing processing and selling of the Organization.

438. The Grenville Centre which is still used by the Central Rehabilitation Committee has bought and stored available quantities of corn and pigeon peas.

439. Carriacou has sold small quantities of corn, molasses and pig and poultry feeds.

Appended are :—

440 1. Statement showing details of purchase, conversion into stock feeds, sales, loss in weight etc. (See Appendix I).

2. Financial summary (Trading). (See Appendix II).

Land Settlement Division Annual Report 1957.

(By L. D. G. Cromwell, Land Settlement Officer.)

441. Staff :

Mr. L. D. G. Cromwell, Agricultural Assistant (Land Settlements),
Mr. L. Paterson, Land Settlement Ranger, Carriacou,
„ L. Noel „ „ „ „
„ A. Syndey „ „ „ „
„ C. Phillip „ „ „ Grenada,
„ E. Lessey „ „ „ „
„ E. J. Peters „ „ „ „
„ C. Welsh „ „ „ „

442. Land Settlements engaged the attention of Government at the beginning of the present century. In 1903 the estates of Harvey Vale and Beausejour in Carriacou were purchased for the purpose and seven years later a start was made in Grenada.

443. *Carriacou Land Settlements.*—During the period 1903 to 1912 Government acquired approximately 2,000 acres of land from the six estates of Limlair, Mt. Pleasant, Harvey Vale, Belair, Dumfries and Craigston for the purpose of Land Settlements. Each Settlement Area is over 300 acres.

444. *Grenada Land Settlements.*—Land Settlements established in Grenada during the period 1910 to 1940 are listed in the following table :—

	SETTLEMENT	Date purchased	Purchased Price £	s.	d.	Size of Settlement	Arable Acreage	Allotments Total No.	Allotments Average Size
						ac. r. pl.			ac. r. pl.
1	Fraze ...	3/10/34	1,286	1	8	128—1—17		47	1—2—00
2	Mt. Cassell ...	10/1/35	612	6	0	102—0—08	97.25	61	1—2—00
3	St. Cyr ...	1914	3,691	9	11	296—3—17	252.36	124	2—0—10
4	St. Cloud's ...	10/37	1,617	15	0	78—0—13	70.00	84	0—3—00
5	New Westerhall	1918	—	—	—	69—2—16	64.04	32	2—0—00
6	Old Westerhall	1911	1,697	17	6	295—3—09	283.56	106	2—3—15
7	Morne Rouge North ...	1910	249	2	3	108—0—05	108.03	37	3—0—00
8	Morne Rouge South ...	1910	394	19	5	87—2—33	87.71	32	3—0—39
9	Point Salines ...	1932	160	3	10	105—1—32	51.79	14	3—3—00
10	Calivigny ...	1912	431	10	2	62—0—22	58.66	23	2—2—00
11	Mt. Nesbit ...	1934	1,900	10	1	165—2—09	160 83	69	2—1—00
12	Plaisance ...	1934	1,964	11	5	112—0—00	98.25	30	3—0—00
13	Belair ...	1935	471	19	0	36—1—00	33.99	21	1—2—00
14	River Sallee ...	1940	5,083	1	11	291—0—12	261.04	214	1—0—00
	TOTAL ...		19,561	8	2	1942—3—33	1627.51	894	—

445. The Settlements of Fraze, Mt. Cassell, St. Cyr, and St. Cloud's are located in the parish of St. Andrew's.

New Westerhall and Old Westerhall in the parish of St. David's; Morne Rouge North, Morne Rouge South, Point Saline and Calivigny in the parish of St. George's.

Mt. Nesbit and Plaisance in the parish of St. John's; Belair in the parish of St. Mark's; River Sallee in the parish of St. Patrick's.

446. The Grenada Land Settlements have within the past 15 years come in for justifiable adverse criticism in fact finding reports. The Director of Agriculture in his report dated 1945 on Land Settlements in Grenada states :

> " In my opinion there is not much that can be done with the existing Settlements to set them on a course towards their development as permanent agricultural production units without drastic reorganisation and considerable modification of tenure conditions. Such re-organisation cannot be undertaken and new conditions of control imposed because the land is already in freehold possession".

The West India Royal Commission that visited Grenada in 1939 was not impressed by the Land Settlements, judging by the Commission's report published in 1945.

447. The Report of a local Select Committee appointed in 1954 to investigate conditions on existing Land Settlements revealed that conditions were unsatisfactory. It should however, be noted that as early as 1913, Auchinleck, Smith and Bertrand, joint authors of a paper on "Land Settlement in Grenada and the Grenadines" made the following significant comment : "These peasant settlements may therefore be regarded in the light of remedies for harmful conditions which have grown up in well populated places than as attempts to settle an unopened districts".

448. It would appear that the tendency is for allottees to exaggerate the importance of freehold ownership of land and to minimise its value as an agent of production.

Population and Livestock Census.

449. The following information was obtained from a census made in July, 1957.

450. (*a*) Population Census—Allottees and thier families living on the settlements listed.

SETTLEMENT	Number of Families: Parents married	Parents not married	Total	Number of Persons: Men	Women	Boys	Girls	Totol	Size of average family
River Salee ...	48	41	89	85	118	143	151	497	5 6
Mt. Cassell ...	9	2	11	10	22	21	16	69	6·3
Fraze ...	11	1	12	16	15	24	14	69	5·75
St. Cloud's ...	24	11	35	47	40	48	57	192	5·5
Mt. Nesbit ...	7	11	18	17	26	30	34	107	6·0
Total ...	99	66	165	175	221	266	272	934	5·66

Less than one-third of those who own settlement lots live on Settlement areas.

(*b*) Livestock Census—

SETTLEMENT	LIVESTOCK					
	Cattle	Sheep	Goats	Donkeys	Pigs	Fowls
River Sallee ...	53	40	47	—	—	680
Mt. Cassell ...	12	6	13	5	2	36
Fraze ...	—	—	2	3	—	26
St. Cloud's ...	10	5	16	4	28	87
Mt. Nesbit ...	6	—	6	10	—	40
Total ...	81	51	84	22	30	869

Post September 22nd, 1955, Hurricane 'Janet' Agricultural Rehabilitation.

451. Many allottees on Land Settlements applied for and obtained loans for the rehabilitation of their farms. Cash advances from approved loans were made by instalments after inspection of work actually done on certificates of the inspectorate staff of the Central Agricultural Rehabilitation Committee. The system encourages good farming practices and the intensive cultivation that is necessary on small holdings to increase crop production. The obligation to repay loans should provide the incentive to persevere in efficient farming practices after the control which inspection imposes is discontinued.

452. The assistance given to allottees on the Land Settlements of River Sallee, St. Cloud's, Fraze, Mt. Nesbit, Plaisance and Mt. Cassell up to 31st December, 1957 from loan Schemes for Agricultural Rehabilitation is of the order shown in the table :—

SETTLEMENT	Number of allottees granted loans	Approximate acreage of lots for which loans were granted	Amount of loans approved	Amount of instalments paid up to 31st December, 1957	Balance available at 31st December, 1957
			$	$	
River Sallee ...	82	118	11,155	10,906	249
St. Cloud's ...	36	54	6,658	6,115	543
Fraze ...	28	30	7,420	5,117	2,303
Mt. Nesbit ...	15	67	8,374	5,902	2,472
Plaisance ...	15	50	5,580	3,353	2,227
Mt. Cassel ...	11	31	4,933	3,307	1,626
Total ...	187	350	44,120	34,700	9,420

453. Soil conservation work was done as part of the agricultural rehabilitation programme, and additional financial assistance made available for the purpose. At River Sallee about 125,000 feet of contour drains were laid down at Mt. Cassell 2,000 feet of storm drains were opened and 4,250 feet of grass barriers planted.

Crops and crop Production.

454. The main crops grown on the Settlements are Cocoa, Nutmegs, Coconuts, Bananas, Sugarcane and miscellany of local vegetable crops (ground provisions). The cropping is disorderly and interplanting indiscriminate, productivity is indeterminate but apparently low.

Tentative crop production figures for 1957 from some of the Settlements supervised by rangers are given in the table shown—Reliance can be placed on the figures given for the number of stems of bananas cut for export, but there is no check on those given for cocoa, nutmegs and mace, and these should be taken with reserve.

SETTLEMENT	CROP PRODUCTION			
	Bananas	Cocoa	Nutmegs	Mace
	No. of stems cut for export	Weight of wet beans in lbs.	Weight in lbs.	Weight in lbs.
Mt. Nesbit ...	425	...	1,791	419½
Plaisance ...	438	...	848	123
Mt. Cassell ...	122	740	495	105
St. Cloud's ...	502	4,060	488	...
Fraze ...	299	1,585	28	...
Total ...	1,786	6,385	3,660	647½

Experimental Project.

455. Mention was made in the 1952 Annual Report of equipment purchased from funds provided under Colonial Development and Welfare Scheme for a Creamery at River Sallee as part of the programme for providing encouragement and assistance to group activities of economic importance on existing Land Settlements.

456. During the year 1957 an investigation was made into the economics of operating the Creamery at River Sallee. The result was unsatisfactory and the investigation abandoned after 5½ months of making butter for sale at a loss of $18.20 per month, excluding wages of a dairymaid.

Roads.

457. Maintenance work was carried out on Land Settlement roads with the limited funds available. The sum of $4,700 was voted for road maintenance work from which an allocation of $500 was made to the District Officer, Carriacou.

458. The cost of work done on road maintenance on the Grenada Settlements is as shown—

St. Cloud's	..	$ 968.00
Westerhall	..	751.00
River Sallee	..	629.00
Mt. Cassell	..	439.00
Mt. Nesbit	..	391.00
Mt. Moritz	..	373.00
Plaisance	..	361.00
Morne Rouge	..	201.00
Fraze ..	..	51.00
		$ 4,164.00

Conveyances for Lots on Land Settlements.

459. Grants of lots of land were given by His Honour the Administrator of Grenada to the nineteen (19) grantees listed :—

	Grantee	Land Settlement	Size of lot
			acs. rd. pls
1	Adina Cyrus ...	Limlair, Carriacou	2—0—00
2	Alfred DeLisle ...	do do	1—2—20
3	Joseph Romain ...	do do	1—2—15
4	Joseph Ogiste ...	Old Westerhall	2—2—36
5	Raymond Williams ...	Mt. Nesbit	2—1—08
6	Edith King ...	do	2—0—10
7	Fred Lewis ...	St. Cloud's	0—3—26
8	Felecity Gibson ...	St. Cyr	1—2—28
9	R. A. Ottley ...	Mt. Cassell	1—2—26
10	Felicity St. Louis ..	do	1—3—08
11	Modestine Campbell ...	do	1—2—38
12	Minetta Taylor ...	River Sallee	0—2—28
13	Eman Campbell ...	do do	1—0—00
14	Edwin Dowden ...	Mt. Moritz	0—2—35
15	Laura Hinds ...	do	0—2—32
16	Sylvia Medford ...	do	0—3—28
17	Clotill Medford ...	do	0—1—25
18	Lucita Duncan ...	do	0—1—29
19	Septimus Harris ...	do	0—1—32

Finance.

460. The following is a statement of the amount of rents and annuities collected during the year 1957, and of arrears outstanding :—

Settlements.	Amount of rents and annuities collected.	Arrears due at 31st December, 1957.
River Sallee ..	$ 962.22	$ 9,171.44
Mt. Nesbit ..	236.28	1,003.61
Fraze	137.20	567.24
St. Cloud's ..	10.00	439.20
Plaisance ..	—	1,872.74
Total ..	1,345.70	13,054.23

Proposed Housing Settlement Schemes.

461. Thirty landowners were interviewed on the subject of making land available for proposed Housing Settlement Schemes. About 600 acres of land were required from various parts of the Island of Grenada for the project. The culminating point of the effort was reached when the Land Acquisition Ordinance (No. 3 of 1945) was invoked, and Notification of Preliminary Survey under Section 4 of the Ordinance was published in the Grenada Government *Gazette* of September 7th, 1957 in respect of portions of land on the following estates :—Mirabeau, Pearls and Dunfermline in the parish of St. Andrew's; Upper Marli, Poyntzfield and Belmont in the parish of St. Patrick's and Waltham in the parish of St. Mark's. Then anticlimax. There has been no sequel.

462. Housing lots were allocated to 43 persons on 23rd August, 1957 selected for the settlement area at Cannes Simon, Mirabeau in the parish of St. Andrew's which was purchased in 1956. Conditional permits to occupy were issued to the allottees, 42 of whom paid a deposit of $20 each and one a deposit of $40. Terms of repayment are by equal biannual instalments extending over a period of 15 years. The size of an average lot is ¼ acre, purchase price is $600 per acre.

463. At Woodlands, the centre of the cane belt in the parish of St. George's, 49 acres of land were purchased for $17,878 in November, 1955, for a controlled housing settlement area. During the latter half of 1957, squatters were attracted to the area. They put up houses, made gardens and have dug themselves well in without permission.

Agricultural Small Tenancies Ordinance No. 17 of 1952.

464. There were several requests for arbitration between Landlord and Tennant to determine compensation on the termination of tenancy of small holdings. Some of these were settled by eventual agreement between Landlord and Tenant, seven others had to be disposed of by formal arbitration under the Agricultural Small Tenancies Ordinance. An appeal against one of the arbitrator's award was dismissed in the Magistrate's Court, St. George's.

465. Assessments of the value of crops damaged and of the purchase price of land were made for the Public Works Department at various times.

General Observation.

466. The designation Land Settlement is ill-suited to what in reality is an aggregate of allotments in a given locality.

467. Where possible existing Land Settlements in Grenada should serve as nucleus for village expansion, and their development should be in unison with the districts in which they are incorporated.

Crown Lands.

468. Revenue from the rent of Crown Lands for the year 1957 amounted to $1,654.42 compared with the relatively large amount of $6,154.04 in arrears.

469. Encroachments and squatting on Crown Lands give cause for concern. In rural areas the perimeter of these lands should be delimited by planting economic trees at suitable intervals along boundary lines. The control of all Crown lands should be centralized for their effective administration.

Forestry Report.

(By J. S. Ross, Dip. Forestry, Forestry Supervisor.)

INTRODUCTION.

470. The Government Forest Reserves in Grenada are comprised of a block of about 5,000 acres situated in the Southern half of the island, and running from Fedon's camp and Mt. Plaisir in the North along the main central ridge to Mt. Sinai, Petit Etang, and the South east Mountain in the South. In Carriacou, Government Forest Reserves total about 500 acres which are made up of High North Reserve, Belair/Beausejour Reserve and Harvey Vale Reserve.

471. As a result of the damage caused by the hurricane in 1955, management during the year laid emphasis on the salvage of windblown timber and the reafforestation of certain selected catchment areas. A total of 16,606 cubic feet of timber estimated to yield about 117,000 bd. feet. of sawn lumber valued approximately $26,000 was salvaged from the Government Forest Reserve during the year.

472. The most noteworthy events during the year were :—

(*a*) The opening of a Timber Impregnation Plant and Timber Development Centre.

(*b*) A start with the reafforestation of certain selected catchment areas.

(*c*) The appointment of a Forest Surveyor for the survey and demarcation of the forest Reserves in the island.

Forest Policy.

473. The function of the Forestry Division is to look after the forest of the Colony in the best interests of the community. To accomplish this, a Forest Policy as outlined by Dr. J. S. Beard, in Development and Welfare Organisation Bulletin No. 11 has been adopted in principle for management purposes. This policy is as follows :—

Forest Reservation.

(i) To effect the permanent preservation of a tree cover on such areas of land as are required for the prevention of erosion and flooding and the preservation of water supplies.

(ii) To effect the permanent reservation as forests of such areas of land as are unsuitable for agriculture, but could be utilised for the economic production of timber crops.

474. *Forest Management.*—To manage the Forest Reserves in such a manner that, whilst still fulfilling their protective functions in the interest of agriculture, they may at the same time provide the maximum amount of forest produce on the basis of a sustained yield, and to effect such improvements of the growing stock in certain selected areas as will enable the colony in due course to become self-sufficient in forest produce.

475. *Utilisation.*—To effect the fullest possible utilisation of the products of the forest subject to the requirements of Forest Management and to encourage the most economic utilisation of both imported and local lumber.

478. *Research.*—To carry out such experimental work as may be required to implement the Forest Policy.

479. *Education.*—To educate and train the subordinate forest staff and to educate all classes of the community to an understanding of the benefits and value to the community of forests managed on a sound basis.

480. *Private Forestry.*—To encourage and assist in every possible way the owners of private forests, woodlands and plantations to manage such crops in a sound manner.

481. *Land Usage.*—To co-operate with all other land interests in the achievement of optimum land allocation and usage, and in all projects of soil conservation and prevention of erosion.

482. The report which follows gives details of the work being done in order to implement the Forest Policy in accordance with a working plan for the period 1956-1960. This working plan is based principally on the recommendations of the "Galland/Lamb Report" of 1955, for post hurricane rehabilitation work.

483. The controlling factors in the implementation of the Forest Policy have been the lack of sufficient funds for Forestry purposes, inadequate staff and the lack of training facilities for the training of the existing staff.

B.—Forest Legislation.

484. No new legislation or amendment to the existing Ordinance was passed during the year.

485. New licence forms as provided for under the Crown Land and Forest Produce Rules, 1956, were brought into use on the 1st of January, 1957, and the old licence that were in use since 1948 were discontinued.

C.—The Forest Estate.

486. The appeal of five (5) persons who refused to accept the valuation of their lands in the Soulier/Mon Repos Catchment area was heard during the year and the acquisition of the 65 acres of land started in 1956 was finalised.

487. No other lands were acquired, nor were funds provided for any other acquisitions.

D.—Survey and Demarcation.

488. A Forest Surveyor was appointed on the 1st August, on secondment from the Public Works Department for a period of twenty (20) months in the first instance, to continue work started in 1954, on the Demarcation of the external boundaries of the Grand Etang Forest Reserve, and in due course to start with the survey of the Mt. St. Catherine Reserve.

489. As a result of damage caused by the hurricane in 1955 to the boundary lines already surveyed, it was necessary for all work done prior to it to be done over. Nevertheless, good progress was made during the year and a total of 496.73 chains (Guter's was traversed, guide trenches dug and beacons erected wherever necessary along the line.

490. The Southern Section of the Grand Etang Reserve lying south of the St. George/Grenville main road should be completed early in 1958.

E.—Management and Working Plans.

491. Management covers the action taken to put the Forest Policy in practice. For this purpose a working plan has been prepared laying down in detail the work to be done for the period 1956-1960. Funds for the implementation of the working plan are provided from Hurricane Rehabilitation grant and loan funds, Colonial Development and Welfare and local funds.

492. A summary of the provisions of the plan is as follows :—

(*a*) Two (2) acres of Nursery are to be formed to yield a total of 60,000 seedlings annually. A planting programme of twenty-eight (28) acres is to be planted and maintained annually and seedlings for a further twenty-five (25) acres distributed to interested farmers for the planting of windbreaks, shade, timber lots, etc.

(*b*) A Timber Utilisation Scheme incorporating a Timber Development Scheme for the salvage of windblown timber is to be started. A Timber Impregnation plant and Seasoning yard are to be started where local lumber is to be bought, seasoned, cut to standard sizes, dressed, treated and re-sold to the public.

(*c*) A Forest Surveyor is to be appointed for the completion of the Survey and demarcation of the Forest Reserves.

(*d*) Finally land should be acquired from time to time as required for the protection of catchments and the extension of the Reserves.

493. Good progress has been made with all work detailed in the working plan.

F.—Communications and Buildings.

494. The Grand Etang Main Road was kept in reasonable repair by the Public Works Department during the year. Other roads leading to forest areas were however neglected and deteriorated considerably during the year. Due to limited funds at our disposal only 2.6 miles of some of the main inspection paths were cleared at a unit cost of $35.00 per mile.

495. Ten (10) new permanent and seven (7) temporary stacking platforms were erected at the Timber Development Centre bringing the total number of platforms in use to twenty-seven (27). Minor repairs were done to both the Forest Ranger's house at Grand Etang and the Forest Guard's house at Ashenden by the Public Works Department during the year. The Forest Ranger's house was attacked by termites in October. Immediate action was taken and the pest eradicated. All buildings were in a good state of repair at the close of the year.

G.—Protection.

496. (*a*) *Damage caused by man.*—Seven (7) Forest offences were reported for the year. The extremely low number of offences is believed to be still due to the fact that large quantities of timber were still lying about on the ground on private lands.

A summary of the offences is as follows :—

Category of offences.	No. of offences Reported	Royalties involved.	Remarks.
Illicit cutting of timber	4	$23.38	Offenders unknown—Police investigation conducted.
Removing without a permit.	1	80.00	Offender cautioned and discharged. Property confiscated and sold.
Other offences.	2	26.00	Offenders unknown—Police investigation conducted.

497. (*b*) *Damage by Other Causes.*—The effect of the hurricane in 1955 are still very apparent. Hundreds of trees are still dying throughout the forest areas. Wood-boring insect damage is still noted, but appears to be restricted mainly to the sapwood of the trees. Severe damage was caused in the Mirabeau and Queen's Park Nurseries by mice and rats eating the seed. Due to the absence of the Forest Supervisor on vacation leave, red-lead was not used before sowing as recommended.

498. (*c*) *Maintenance of Boundaries.*—All known boundary lines were cleared during the year at a unit cost of approximately $35.00 per mile for a total of 26 miles of line.

499. It will be noted from the above that the unit cost for this work has been reduced to about one-fifth of what it was in 1956. The unit cost for that year was $177.00 per mile. This reduction is due mainly to the fact that all severe blocks in the Boundary lines were cleared in 1956.

H.—Silviculture.

500. (*a*) *Seed Collection.*—Twenty (20) pounds of Galba Seed was collected and shipped to Jamaica.

501. The following seeds were imported for the year :—

42 lbs. Blue Mahoe (Hibiscus elatus) from Jamaica,
20 lbs. Teak (Tectona grandis) from Trinidad,
4 ozs. Eucalyptus spp., from Jamaica.

In addition to the above, 17½ lbs. of teak seed in stock from the previous year was used up for sowing on the Nurseries. 2 lbs., of Mahoe seed was given to Plantation Management Ltd., and 1 lb., to Annandale Estate. These estates started small nurseries of their own.

502. (*b*) *Nurseries.*—Seedlings raised on the three Nurseries totalling one (1) acre established in 1956 on sites at St. Margaret, Queen's Park and Les Avocat totalled 36,555 and were made up as follows :—

Teak ..	6,810
Mahoe ..	29,745
Total ..	36,555

Of this amount, 1,653 were culls and discarded; of the remaining 34,902 distributions to farmers totalled 1,061, the remainder were all used for planting in the forest and on Crown lands.

503. Four (4) nurseries totalling two (2) acres were established during the year. Three (3) are on the old nursery sites used in 1956 and the fourth at Mirabeau. A total of 40½ lbs., Mahoe seeds, 37½ lbs., teak seeds and 4 ozs., of Eucalyptus spp., were sown. Severe damage was caused at both Mirabeau and Queen's Park by rats and mice eating the Teak and Mahoe seed, as a result a shortage is expected in the number of teak seedlings that will be available for planting in 1958. It is expected that about 50,000 mahoe seedlings will be available. A 10% sample check has not yet been completed.

504. Total costs in connection with nursery work for the year was $2,258.00. Of this amount just over $1,100 has been spent on the Mirabeau Nursery, where costs have been extremely high. Further investigations are required in order to reduce costs.

505. (*c*) *Plantations*.—The main plantation work undertaken during the year was the planting of 20 acres of Mahoe in two (2) selected catchment areas. Costs were high in connection with this work; this however, was to be expected as it proved impossible to plant the areas under the taungya system. Gardeners in Grenada do not appear to be prepared to do this work. It was also very difficult to recruit coal burners, and as a result all clearing and maintenance had to be done departmentally. Average unit cost for this plantation work was $145 per acre for the first year. Growth in these plantations was good and it is not expected that it will be necessary to do very much beating-up in 1958.

506. A teak plot of five (5) acres was planted in the Richmond Hill/Botanic Gardens area; growth has been good and the planting is regarded as a success. Costs were also high here for the same reason as outlined in paragraph 505.

507. A limited amount of maintenance work was done to teak plots at Mt. Moritz and Richmond Hill/Botanic Garden areas. A teak plot at River Road area, damaged by the Hurricane in 1955, was coppiced. An 8-year old cassia siamea plot at the Botanic Gardens was also coppiced. It is proposed to run these cassia siamea plots on a coppice rotation for fence posts and fuelwood.

508. In the St. Margaret area of the Grand Etang Reserve, work was started on an area of 85 acres established in mahoe and other local species by a process of assisted natural regeneration prior to the hurricane in 1955 and severely damaged by it. The object of this exercise is to establish forest cover using coppice shoots from the windblown poles, and at the same time to salvage as much as possible of the poles for fence posts. Results so far have been most encouraging and costs have been reletavely low.

509. (*d*) *Natural Regeneration*.—A limited amount of maintenance work was done to the mahogany and cedar plot at the Botanic Garden/Richmond Hill. Growth has been slow, but some improvement has been noted. The majority of saplings appear to have straightened and become more wind-firm. Thinning of this plot will be done in 1958.

510. Some vine cutting and thinning was done to the Balsa at Les Avocat. Measurements taken at the end of the year were disappointing.

I.—Research and Investigation.

511. Investigations into the possibilities of growing Pinus caribaea have been most disappointing. Seeds imported from British Honduras were sown and germination was very good. At six (6) weeks seedlings were transplanted into pots, but withing a few weeks yellowing and dying-back started. Watering with a solution of rooting hormone helped, but was not successful. Fertiliser treatment also helped, but only about twenty (20) seedlings survived. These were planted into the field but at the end of the year only four (4) remained alive. Further experiments will be carried out in 1958.

512. Investigation into the possibilities of growing Balsa for the export trade have also been most disappointing. Measurements taken in two sample plots at Les Avocats, indicte that growth is far too slow to produce wood within the required specific gravity. Due to the exacting demands of this species, and the limited lands available for growing it, further investigation has been abandoned.

J.—Utilisation.

513. The total volume of wood cut from Crown Forests for the year was as follows :—

Timber	..	16,605 cubic feet.
Fuelwood	..	42,605 „
Posts ..	..	4,298 „
Total	..	63,210 „

The stacked volume of fuelwood has been multiplied by the factor .75.

514. The following statement shows comparative figures for the three (3) year period 1955-1957:—

Product.	1955	1956	1957
Timber including posts	15,614 cubic feet	9,313 cubic feet	20,903 cubic feet
Fuelwood.	20,640 „	6,230 „	42,605 „
Bamboo	848 bundles.	520 bundles.	433 bundles
Miscellaneous	21 „	6 „	16 „

515. An increase has been noted in the utilisation of both fuelwood and timber from Crown forests. This increase is believed to be mainly due to two factors, the installation of the Duncan Sawmill and the coming into operation of the Government Timber Development Centre. A total of 74,343 bd. feet of lumber was bought at the Timber Development Centre for the year and it is estimated that at least 100,000 bd. feet. was produced by the Duncan Mill.

516. The opening of a Hot and Cold open tank, timber treating plant at the Timber Development Centre is regarded as a definite step forward in timber development here. It is regretted that the facilities offered by this plant have not been put to greater use during the year. A total of about 10,000 bd. feet of lumber and about 2,000 fence posts represents the total amount of timber treated for the year. It is felt that an example should be set by Government in this matter and that instructions issued in the proper quarters making it a standing rule that all timber to be used in government build-

ings must be treated. Such an order exists in Trinidad. It is expected that it will take some time before the public is educated in the value of using treated lumber. The charge for treating during the year was fixed at five cents per board foot.

517. Good progress has been made with other aspects of timber development and as stated in paragraph 515, 74, 343 board foot of lumber was purchased and stacked for seasoning during the year. Of this amount 6,769 board feet was dressed by the Public Works Department as an experiment which proved to be far too costly and in addition, too much for the old machines being used. As a result, recommendations were submitted to Government seeking authority and funds to order new machines. These recommendations were approved at the end of the year and machinery ordered. Sales during the year totalled 6,684 board feet rough lumber, 3,160 board feet dressed lumber and 327 board feet treated rough lumber; stocks at the close of the year totalled 60,563 board feet rough lumber and 3,259 board feet dressed lumber.

518. The demand for treated fence posts has shown a marked increase during the year and it has been impossible to meet same. The main difficulty causing this has been the extraction of poles from the forest. The price asked by contractors for cutting and conveying same to the roads was considered to be excessive (16 cents per 12 feet pole). This difficulty was overcome to some extent in the latter part of the year by extracting poles in conjunction with silvicultural operations: nevertheless, a shortage of fence posts to be sold at a price that is considered reasonable (50 cents per 6-foot treated post) is expected in the very near future.

519. Total sales from the Timber Development Centre for the year amounted to $3,417.89. Appendix A. and Appendix B., to this report give in detail the transactions for the year. Appendix C., is a statement of all expenditures incurred in connection with the establishment of the Scheme from its commencement to the end of the year.

K.—Trade and Production.

520. A definite increase is recorded in the production of local lumber during the year. As stated in paragraph 514 an estimated total of between 170,000 and 200,000 board feet was produced. Figures are not available from the Duncan mill or from pit sawyers on privately owned lands. Details of trade in connection with the Timber Development Scheme are given in paragraphs 40 and 41 and Appendicies A. and B.

521. Imports of lumber have shown a marked increase between the years 1954 and 1956. This increase is believed to be mainly due to the excessive building programme undertaken as a result of damage to buildings caused by the hurricane in 1955. Figures of imports for the year 1957 are not available, but a decrease in imports is expected.

522. Comparative figures of Imports and Exports for the period 1954 to 1956 are shown in Appendix D.

L.—Finance.

523. Royalties from forestry sources for the year showed an increase over previous years and totalled $3,134.10 which is made up as follows :—

Timber	$ 2,865.08
Fuelwood	74.89
Bamboo	51.97
Bonus on Nutmegs ..	140.24
Miscellaneous ..	1.92
	$ 3,134.10

Comparative figures for the four (4) year period 1954-1957 are as follows :—

	1954	1955	1956	1957
	$	$	$	$
Timber ..	1,318.60	1,553.20	1,130.35	2,865.08
Fuelwood ..	69.36	105.50	31.32	74.89
Bamboo ..	92.88	101.86	26.50	51.97
Nutmegs ..	616.46	916.32	709.13	140.24
Miscellaneous	.96	6.66	4.08	1.92
	2,098.26	2,683.54	3,901.38	3,134.10

524. Expenditure incurred during the year not including salaries, is a as follows :—

Head 3.—Other Agricultural Activities—Subhead 4.—Forestry Items.

	Approved Estimate	Actual Expenditure.
Silviculture :	$	$
Nurseries	2,100.00	1,973.53
Reafforestation of Catchment areas	3,200.00	3,104.14
	5,300.00	5,077.67
Timber Development :		
Capital	3,100.00	2,565.76
Recurrent :—		
Revolving fund ..	18,620.00	15,678.29
	21,720.00	10,244.05

Colonial Development and Welfare Scheme D. 2056.

Other Charges (including the Survey labour, silviculture and operation of land rover) ..	7,440.00	6,429.19
Contingencies	480.00	131.94
	7,920.00	6,561.13
Local Funds :		
Boundary Lines— Maintenance ..	1,000.00	991.02

NOTE : The amounts recorded as actual expenditure are subject to aleteration as office accounts have not been reconciled with Treasury records.

M.—Education.

525. The necessity for the training of Forestry Staff cannot be too strongly emphasized. None of the subordinate staff here have been trained, and this is a major difficulty in the efficient implementation of working plans. Every effort should be made to train staff whenever the opportunity presents itself. More advantage should be taken of the short course offered in Puerto Rico, and at least two (2) officers should be sent annually, until more adequate training facilities become available. It is hoped that a forestry branch of the Eastern Caribbean Farm Institute will materialise in the not too distant future.

526. Under the teacher training scheme, the Forest Supervisor, delivered a series of lectures to teachers.

527. The Conservator of Forests, Windward Islands and the Forest Supervisor gave several addresses over the Windward Islands Broadcasting Service on many aspects of forestry during the year.

N.—Staff.

528. The staff at the end of the year was as follows :—

H. Fraser, B.Sc.,	..	Conservator of Forests, Windward Islands Headquarters—St. Lucia),
J. S. Ross, Forestry, Commission Forester	..	Forest Supervisor,
T. Laldee	..	Forest Ranger (North),
J. W. E. Lewis	..	Forest Ranger (South),
W. Garraway	..	Senior Forest Guard (North),
S. Daniel,	..	Forest Guard (North,
L. Laldee	..	Forest Guard (North),
N. Bain	..	Forest Guard (South),
V. Honore	..	Forest Guard (South),
A. Telesford	..	Forest Guard (South),
D. Marrast	..	Forest Guard/Driver,
R. Millet,	..	Forest Surveyor.

529. The following appointments were made during the year under Colonial Development and Welfare Scheme D. 2056 :—

(i) Ashley Telesford, appointed Forest Guard, 1st May, 1957.

(ii) Raymond Millet, appointed Forest Surveyor, 1st August, 1957. Mr. Millet was appointed to fill the post vacated by Mr. L. F. Berkeley in March, 1956. Mr. Telesford was appointed to fill the post vacated by Forest Guard Alexander who resigned in April, 1957.

530. Mr. J. S. Ross, Forest Supervisor, was granted one hundered and twenty (120) days vacation leave from 6th September, 1957. During his absence, Mr. F. N. P. Branch, Senior Forest Ranger, St. Lucia, acted as Forest Supervisor.

531. Leave was granted to the following other officers during the year.—

(i) T. Laldee, Forest Ranger—Two (2) weeks casual leave from 11th December, 1957.

(ii) J. W. E. Lewis, Forest Ranger—Two (2) months sick leave from 18th April, 1957. Mr. Lewis suffered injuries in a motor cycle accident.

(iii) W. Garraway, Senior Forest Guard—Three (3) weeks sick leave from 24th September, 1957. This officer suffered injuries from a fall in the forest.

(iv) V. Honore—Forest Guard—Two (2) weeks casual leave from 18th November, 1957.

(v) L. Laldee, Forest Guard—Two (2) weeks casual leave from 18th November, 1957.

(vi) A. Telesford, Forest Guard—Thirty-one (31) days sick leave from 15th June, 1957 and seven (7) days casual leave from 18th September, 1957.
This officer suffered injuries in a motor cycle accident.

(vii) D. Marrast, Forest Guard/Driver—Two (2) weeks casual leave from 14th May, 1957, and through an oversight, a further two (2) weeks fro m the 31st October, 1957.

532. A total of one hundred and two (102) labourers were employed on forestry work during the year.

Miscellaneous.

533. The Conservator of Forests visited Grenada several times during the year on official business.

534. The Acting Forest Supervisor paid a routine visit to the dependency of Carriacou during the year.

APPENDIX A.

Statement of Timber Purchased, Treated and Sold, in Board Feet for the Year, 1957.

Date	Purchased Rough	Treated Rough	Converted to Dressed	Loss	Dressed	Treated Dressed	Sold Rough	Sold Dressed	Sold Treated Dressed	Sold Treated Rough	Rough Stock	Rough Treated Stock	Dressed Stock
March ..	2,793	—	—	—	—	—	149	—	—	—	514	—	—
April ..	5,713	—	—	—	—	—	516	—	—	—	7,841	—	—
May ..	5,970	—	—	—	—	—	—	—	—	—	13,811	—	—
June ..	6,027	—	—	—	—	—	702	—	—	—	19,136	—	—
July ..	5,168	—	1,500	—	1,500	—	614	—	—	—	22,190	—	1,500
August ..	9,406	—	—	—	—	—	319	123	—	—	31,277	—	1,377
September ..	13,254	—	2,754	233	2,521	—	126	772	—	—	41,651	—	3,126
October ..	9,641	—	1,834	89	1,745	—	2,429	310	—	—	47,029	—	4,561
November ..	9,317	—	681	28	653	—	1,320	1,614	—	—	54,345	—	3,600
December ..	7,054	327	—	—	—	—	509	341	—	327	60,563	—	3,259
	74,343	327	6,769	350	6,419	—	6,684	3,160	—	327	298,357	—	17,423

APPENDIX. B.

Statement of Fence Posts purchased, converted, treated and sold for the year, 1957.

Date	Post Purchased in feet		Conversion in feet		Converted stock in feet		Treated in feet		Sold treated in feet		Treated stock in feet		Untreated stock in feet	
	6	12	Loss	Gain	6	7	6	7	6	7	6	7	6	7
April ..	59	67	12	—	191	—	—	—	—	—	—	—	191	—
May ..	366	161	169	—	660	5	384	5	—	—	380	5	467	—
June ..	47	22	6	—	90	—	467	—	—	5	847	—	90	—
July ..	168	14	—	—	193	3	108	—	50	—	—	—	175	3
August ..	80	—	—	—	74	6	50	9	600	—	—	—	—	—
September ..	—	—	—	—	—	—	159	—	5	—	—	—	—	—
October ..	201	—	—	50	151	50	—	2	390	11	—	—	—	—
November ..	75	—	—	—	75	—	56	21	60	4	—	—	—	—
December ..	619	—	—	60	551	68	485	95	600	112	—	—	—	—
	1,615	267	187	110	1,985	132	1,709	132	1,709	132	1,227	5	923	3

APPENDIX C.

Statement showing total Expenditure incurred in connection with the establishment and operation of the Timber Development Centre together with value of a stock and sales, up to the end of the year, 1957.

		Capital Outlay :	
Total sales for the year 1957	$ 3,417.89	Impregnation plant, office, stacking platforms, furniture, etc., ...	15,067.66
Value of stock of rough lumber 60,563 board feet at 22 cents per foot. ..	13,323.86	*Recurrent :*	
Value of Stocks of wood preservative—approximately 1½ tons at $1,380.00 per ton	2,070.00	*Maintenance and Operation :*	
Value of Stocks of fence posts—276—6-foot posts at 50 cents each ..	133.50	Purchase of wood preservative, etc. ..	2,924.91
Value of dressed Stock of lumber 3,259 board feet at 26 cents per foot ..	847.34	Purchase of lumber	12,065.61
		Labour	2,057.77
		Incidentals	206.18
		10% of capital for depreciation ..	1,506.77
			18,761.24
		By Balance ..	1,031.35
	$ 19,792.59		$ 19,792.59

NOTE :—Figures quoted in this statement are subject to correction as the books have not been audited to date.

APPENDIX D.

Statement showing comparative figures of Imports and Exports for the period 1954-1956

IMPORTS :

Articles	QUANTITIES.			VALUE.		
	1954	1955	1956	1954 $	1955 $	1956 $
Lumber :						
dressed sup.						
undressed feet. ..	1,260,674	2,296,689	4,696,323	362,709	635,062	1,602,126
Shingles—No.	118.800	149,750	846,300	2,492	4,726	23,355
Other Articles—						
Matches—gross	19,644	16,175	21,026	110,299	144,142	124,213
Furniture	—	—	—	7,871	7,873	11,018
	—	—	—	508,890	880,012	1,870,569

EXPORTS :

Articles.	QUANTITIES.			VALUES.		
	1954	1955	1956	1954 $	1955 $	1956 $
Timber—						
Mahogany—sup. feet. ..	934	2,830	800	259	794	300
Other Articles—						
Unmanufactured articles ..	—	—	—	300	1,956	812
	—	—	—	559	2,750	1,112

TIVOLI AGRICULTURAL STATION

(Report by Mr. George Phillip, Agricultural Assistant).

535. There were many improvements in Agriculture in this district this year. The response showed by the farmers in taking advise was exemplary, and their co-operation in Agricultural matters was most united.

536. *Weather.* The highest rainfall figure for any month of the year was 7.46 inches which was recorded on the station for the month of November. The lowest rainfall for the year was 0.36 inches in March, the average rainfall was 5.06 inches.

537. *District work.* The year's extention work was carried out by the District Agricultural Assistant and six Agricultural Instructors. Planting material for replanting areas which were destroyed by Janet were ready for distribution early in the year, and the extension staff toiled endlessly preparing plots, carrying out the distribution of plants and fertilizers, and laying down demonstration plots throughout the district.

538. Full co-operation was given by the Cocoa Agronomist and Agricultural Officer (cocoa).

539. *Visits and advisory work.* Four hundred and seventy six visits to estates and one thousand nine hundred and nine (1909) to farmers were made during the year. The object of the visits were mainly to give insight to the growers on improved agricultural practises, and a knowledge of the economical principles of modern agriculture. Much work was also done in bringing about a reasonable understanding among farmers with regard to the rehabilitation programme.

540. The establishment of pure stand banana plots was urged and plants were brought in to the district from St. Vincent and St. Lucia.

541. Encouragement was given to the growers in the planting of cocoa (clonal). The destruction of old cocoa fields, and their replacement with clonal Cuttings did not meet the favour of most farmers in the early part of the year, but later began to take good effect.

542. Emphasis was laid on barriers and wind breaks in banana areas, and on the erection of sheds for proper storage and handling of the fruits.

543. Interest was stimulated in the growing of more fodder grass and pastures in order to obtain ready feed for livestock and as a result fodder plots were established in the following places:—

(1) Crayfish
(2) Waltham
(3) Bonaire.

544. The housing of livestock is in small practise enough, dispite the fact that a few farmers did see the benefits to be derived from keeping the live-stock and manure undercover.

545. Interest was aroused in the district in the planting of Coffee for barriers, for boxing in fields, and in growing coffee as a permament crop under the sun hedge system. The resulting factor was that by the end of the year, the total number of plants required were:

(1) Plants required—97,000
(2) Holes already dug—31,000
(3) Holes lined out—41,762
(4) Holes to be lined—24 238.

546. *Soil Conservation Work.* With the full co.operation given by the farmers, soil conservation work was to make rapid strides within the area. Several times during the year, surveys were made to check up on Soil Conservation Grants, and efforts were made to encourage farmers into giving their full support and co-operation for the worthy cause of saving his soil, and thus saving Grenada.

547. *Work done during the year.* Contour drains—167, 235 ft.
Stone barriers—40, 000 ft.
Vegetable barriers—160, 234 ft.

The drains were run through peasant and estate holdings, as well as on school plots and land settlement areas.

548. Mr. Morris Nyack of Diamond estate and Major Power of Tufton Hall, did a great deal of soil conservation work with their staff.

549. 12, 950 ft. of contour lines were also laid down at Isle de Rhonde as a part of the soil conservation programme for 1957.

550. *Agricultural Meetings.* There were weekly meetings held by the different Clubs in the District throughout the year, at which the Agricultural Assistant for the district or a representative gave addresses.

551. Peasants became very interested in the co-operative movement during the year, and by year's end many of the clubs had been working towards becoming Registered Co-operative organizations.

552. *Livestock.* The livestock situation showed little change during this year, and because of the lack of a steady market, such as Trinidad can offer, many farmers were reluctant in increasing their livestock production.

553. The obtaining of foodstuff for poultry and other livestock still remains a problem for the small farmer. Livestock Disease—the most serious outbreak of disease in the district was Rabies—several cases of dogs were reported with the disease.

554. *Artificial Insemination of Cattle.* These fall in three categories:

(1) Inseminations performed on cows for the first time since calving, or in the cases of Maiden heifers, for the first time.

(2) Repeat inseminations to either cows or heifers which have been previously served by other bulls.

(3) Repeat services of either cows or heifers which have been previously inseminated.

(1)	(2)	(3)
100	2	25

555. One hundred and twenty seven inseminations were performed on one hundred cows.

556. In some cases a cow or heifer required two or more inseminations before they came into calf.

557. *Crops in the District.* Cocoa:— On the whole the cocoa crop made a fair recovery this year, and a few farmers got within close range of their pre-Janet productions.

558. Thrips (Heliothrips rubrocinctus) did a little damage in some areas, but spraying with Shell Dieldrex was able to keep attack under control.

559. Cocoa Beetles were also found in a few places, but did no real serious damage.

560. *Nutmegs* Several trees which were propped up after Janet, caught root and are doing well. Many seedlings too, have been growing quite well and on Tufton Hall Estate. Nearly 1,000 seedlings which were found growing in a swamp, have been planted out in fields.

561. *Coconuts.* The distribution of coconut plants by the Department of Agriculture, has brought about wide spread interest in the crop, and many old fields were replanted this year.

562. Several boat loads of coconut plants were taken to Isle de Rhonde, and planted on that Island. Honcurable Eric Copland and Mr. Frank De Gale planted large acreages. Mr. P. J. Hosten also planted.

563. *Bananas.* Remarkable strides were made with this crop. River Antoine, Mt. Reuil, Tufton Hall Estate, and many others all helped to make this fruit an astounding success in their district.

564. Food crops made fair progress, and a reasonable proportion was on hand throughout the year for local consumption.

LAND USE.

(By E. Payne, B.S.A., Land Use Officer.)

565. After the hurricane devastation it was agreed that large scale agricultural Rehabilitation necessitated an accurate assessment of land resources. As a result a new division, Land Use, came into being in 1956 financed by Agricultural Rehabilitation Funds. Work began with a six (6) week reconnaisance survey by Mr. K. Vernon, Senior Soil Surveyor of the West Indies Soil Research Scheme. Mr. E. Payne, Land Use Officer, Jamaica, was loaned to the Government of Grenada for six (6) months to carry out the soil survey, to prepapre a soil map and in conjunction with Mr. K. Vernon to prepare a report. To ensure continuity and maximum return on results of the survey it was decided that a Land Use Officer for Grenada be appointed prior to commencing the survey. Mr. E. Payne, than Cane Farming Officer, of this department, was appointed Land Use Officer from 1st September, 1956.

Mr. C. Francis was appointed Field Assistant, Land Use Officer in time to participate in all phases of the survey in the field. During the run of the survey the Land Use Officers were accompanied for six (6) weeks by Mr. M. Brunt of the Directorate of Overseas Surveys, England. The survey was completedby April, 1957 and Mr. Payne returned to Jamaica after making arragements to submit the soil map and report.

566. The Land Use Officer (Grenada) began the preparation of more detailed land capability for individual properties—estates and small holdings. In addition he had a short course in which other officers of the the department were introduced to the significance and application of land use work in the sphere of agricultural extension and research. From September 2nd to November 27th, the Land Use Officer was attached to the Soil Chemistry Division, Department of Agriculture, Jamaica, where he was afforded an opportunity to further studies in land capability and farm planning. On his return to Grenada the Land Use Officer resumed work on large scale land capability mapping and farm planning.

BANANAS.

(By. E. S. Holgate, Banana Officer).

567. *Introduction*—The Banana Industry played a major role in the resuscitation of the island economy, which was so badly shaken by the hurricane 'Janet'.

568. The estimated production of 500,000 stems for the year under review was exceeded by 68,000.

569. The banana contributed more to the provision of regular employment of labour, in agriculture than any other of the island's major export crop. This not only benefitted agricultural workers, but stevedores, truck owners, tally clerks and banana collectors as well. It is safe to say that had it not been for bananas, the labour situation in the island to-day would have been critical.

570. Expansion of the industry progressed satisfactorily and at the end of the year there were 2,582 registered bananas growers with 11,799 acres under cultivation, of which 1,777 acres were in pure stand, and the rest interplanted with other crops.

571. *Expenditure.*—The sum of $127,020.00 under Head 3—Other Agricultural Activities, was approved for the purpose of providing planting materials for rehabilitation work during 1957. The amount expended was $100,660.19 leaving a balance of $26,359.81 at the end of the year.

572. *Planting Materials.*—(*a*) *Importation of.*—The importation of banana suckers was concluded during the year.

573. This year's import of 437,769 suckers brought the total quantity of banana plants imported since hurricane 'Janet' to 1,412,578 of which 317,996 were imported by private enterprise. The following table shows particulars of importations :—

Where from	Quantity received
St. Lucia ..	$ 930,194
Dominica ..	306,670
St. Vincent ..	102,500
Jamaica	73,214
Total ..	1,412 578

574. (*b*) *Local Purchase.*—One hundred and ten thousand five hundred and sixty-four (110,564) banana suckers of the Lacatan and Giant Fig varieties were purchased and distributed locally during the year.

575. *Plant Multiplication.*—The nursery at Mirabeau yielded 16,503 suckers which were distributed to farmers. Replanting of this nursery was also effected.

576. *Investigation and Demonstration Plots.*—The type of sucker trial at Mt. Moritz Agricultural Station had to be abandoned as the site was selected for a recreation ground for the district, on the instruction of the then Minister of Trade and Production. The spacing trial at Beausejour estate was abandoned due to impeded drainage of the site on which the plot was laid out.

577. A 3-acre demonstration plot was established at Mirabeau in the month of September. In addition to this, small banana demonstration plots under the supervision of the Agricultural Extension officers in whose areas they fell, were established on the following properties:—

(1) H. Fraser's holding—Pomme Rose,
(2) Mrs. Sandrine James' holding—Perdmontemps,
(3) Mrs. L. Moore's holding—Vincennes,
(4) Petit Etang Estate,
(5) Dunfermline Estate,
(6) Mt. Rose Estate,
(7) Belmont Estate,
(8) Black Bay Estate.

578. A combined spacing trial and demonstration plot was also established at Perseverance estate.

579. *Fruit Production and Export.*—During the year forty-three (43) shipments comprising 568,841 stems of bananas were made to the United Kingdom. The weight of the years export was 7,817 tons and the cash value $1,341,914.46.

580. The average weight of fruit exported for the year was 30.8 lbs. per stem.

581. The number of stems of bananas rejected at the Reception Station was 24,648 which represented approximately 4.3% of all fruit offered for export.

582. The average price per lb. received for bananas during the year was 7.669 cents and the average price paid to producers was 5.8582 cents per lb.

583. The following table shows comparative figures and value of fruit exported for the period 1953-57 :—

	1953	1954	1955	1956	1957
No. of stems	49,863	108,900	92,244	67,115	568,841
Value ..	$ 51,089	189,237	139,500	138,500	1,387,778

584. *Extension and Advisory Work.*—Educational work among farmers on the production of bananas for export received special attention during the year. Lectures and demonstrations on the proper handling of bananas as well as cultural practices were conducted throughout the island. To ensure the proper handling of bananas, the extension staff of this department concentrated its efforts on banana work only, on all banana days. This contributed in no small way to the improvement in the quality of fruit exported from this island.

585. Numerous banana sheds mostly of a temporary nature, were erected all over the island by banana producers in an effort to protect the fruit from sunscorch.

586. Regular visits to estates and peasants' holdings were made during the period under review and advice given on various aspects of banana cultivation.

587. *Training.*—Training of Junior Agricultural Instructors in the selection of bananas for export was carried out during the year. Valuable assistance in this direction was given by Mr. E. D. James, A Senior Selector of Geest Industries (W.I. Ltd). who spent two (2) months here, advising on the selection of bananas for export.

588. *Banana Marketing Groups.*—An attempt to foster the co-operative marketing of bananas among small farmers made during the year proved successful. The pioneer groups or Farmers' Clubs as they are better known, were Pomme Rose, Birch Grove, Union-Samaritan (Unisam) and Concord. Pomme Rose which was the first group to market bananas co-operatively, started on the 30th April, 1957, with a shipment of 35 stems. By the end of June, seven (7) farmers' clubs were engaged in the co-operative marketing of bananas and at the end of the year the number of groups marketing bananas had risen to twelve.

589. Pomme Rose and Birch Grove clubs received assistance from the Grenada Banana Co-operative Society by way of materials to erect banana sheds. The other groups erected sheds at their own expense.

590. These groups sold 38,361 stems of bananas for the period they operated during the year and received $69,227.48.

591. *Miscellaneous.*—Excellent co-operation in all phases of banana work was recieived from the Acting Superintendent of Agriculture, the Rehabilitation Commissioner, the Agricultural Extension staff and the Secretary of the Grenada Banana Co-operative Society.

PLANT PROTECTION.

(Report by D. K. Samuels, Plant Protection Officer.)

592. *Introduction.*—The Plant Protection Division of the Department of Agriculture was extended in July 1956, through a grant from Agricultural Rehabilitation funds, under a scheme for the control of Leafspot disease in Banana, and the purchase and sale of Insecticides and Fungicides to farmers for the control of other insects and pests of vegetable and food crops, as well as flowers and ornamental trees.

593. The other phase of activities was financed from local revenue. These include labour for the control of Witches' Broom disease in Cacao, and Love Vine on Government properities.

594. *Leafspot Disease.*—During the year under review, emphasis was placed on maintaining a twenty-one (21) day spraying cycle against the spread of Leafspot which during certain periods increased in density. There are of course certain isolated pockets in the parishes of St. Andrew, St. John, and St. Mark where the infection remained high for long periods, and which were sprayed on a fifteen(15) day cycle. All banana cultivations were sprayed at least 15 times during the year, and from general observation, cultivations in the high elevation where humidity is constant showed high infection, whereas in the lower belts the infection appeared light-medium.

595. *Moth Borer and Frog-hopper.*—Experimental spraying trials were carried out with the use of Endrin and Dieldrin on approximately seventy-two (72) acre of canes during the months of October and November. The mixture applied at low volume was 1 pint Dieldrin in 4 gallons of water. The cost of materials and labour was borne by the farmers.

596. *Staff.*—The staff of the Plant Protection Division is comprised of one Agricultural Assistant, (Plant Protection Officer) two Senior Plant Disease Inspectors, six plant Disease Inspectors, (Leafspot Control), four Plant Disease Inspectors, (General), two Clerical Assistants, one Senior and one Junior Mechanic, Six Land Rover Driver-Mechanics, Six Depot Assistants and Sales Clerk, and approximately eighty spray men.

597. The island is divided into two sections, east and west, in order to facilitate easy and effective supervision.

598. *Plant Protection Depot.*—Below is location of spraying Depots throughout the colony.

1. Main Depot and Office, St. George's,
2. Plant Protection Depot, Snug Corner, St. George's,
3. Plant Protection Depot, Thebaide, St. David's,
4. Plant Protection Depot, Gouyave, St. John's,
5. Plant Protection Depot, Victoria, St. Mark's,
6. Plant Protection Depot, Sauteurs, St. Patrick's,
7. Plant Protection Depot, Hermitage, St. Patrick's,
8. Plant Protection Depot, Grenville, St. Andrew's
9. Plant Protection Depot, Birchgrove, St. Andrew's,
10. Plant Protection Depot, Tuilleries, St. Andrew's.

599. *Transport.*—There are eight Land Rovers attached to the Division , one of which is stationed in Head Office as relief, and for transporting stocks to the various depots, while the remaining seven are assigned to the parishes.

600. *Spray Machines.*—The following are the type of mistblowers used by the Division.

Kiekens Dekker ..	36
Motoblo	20
Micronette ..	4
J.L.O.	11
Minimicron ..	1
Total	72

600. *General.*—The total number of Banana Growers registered at the end of 1957 amounted to 2,582 with an estimated total area of 11,799½ acres. These are classified as follows :

9,998 acres Interplanted,
1,761½ acres Pure Stand,
40 acres Nurseries.

11,799½

The total number of holdings between ¼ acre and 9¾ acres ..	2,405
The total number of holdings between 10 acres and 49¾ acres ..	128
The total number of holdings from 50 and above	49
Total	2,528

601. *St. George's :*

Number of holdings between ¼ acre and 9¾ acres	100
Number of holdings between 10 acres and 49¾ acres	6
Number of holdings from 50 acres and above	3
Total	109

602. *St. David's :*

Number of holdings between ¼ acre and 9¾ acres	214
Number of holdings of 10 acres and 49¾ acres	9
Number of holdings from 50 acres and above	2
Total	225

603. *St. Mark's :*

Number of holdings between ¼ acre and 9¾ acres ..	
Number of holdings between 10 acres and 49¾	250
Number of holdings from 50 acres and above	25
	12
Total	287

604. *St. Patrick's :*

Number of holdings between ¼ acre and 9¾ acres	
Number of holdings between 10 acres and 49¾ acres ..	295
Number of holdings from 50 acres and above	32
	6
Total	333

605. *St. John's :*

Number of holdings between ¼ acre and 9¾ acres	
Number of holdings between 10 acres and 49¾ acres ..	440
Number of holdings from 50 acres and above	23
	9
Total	472

606. *St. Andrew's North :*

Number of holdings between ¼ acre and 9¾ acres	
Number of holdings between 10 acres and 49¾ acres	325
Number of holdings from 50 acres and above	16
	11
Total	352

607. *St. Andrew's South :*

Number of holdings between ¼ acre and 9¾ acres	781
Number of holdings between 10 acres and 49¾ acres ..	17
Number of holdings from 50 acres and above	6
Total	804

608. **Summary.**

St. George's Number of Holdings ..	109
St. David's „ „ ..	225
St. Mark's „ „ ..	287
St. Patrick's „ „ „ ..	333
St. John's „ „ ..	472
St. Andrew's North „ „ ..	352
St. Andrew's South „ „ ..	804
Total	2,582

608. **Age Group Classification of Bananas.**

Parish.	Below 9 months Old.	Ratoon	Totals.
St. George ..	205	372½	577½
St. David ..	219	490¾	709¾
St. Mark ..	156	2,197¾	2,353¾
St. Patrick ..	641	1352	1,966
St. John ..	386	2306	2,692
St. Andrew, North	574½	1,271	1,845½
St. Andrew, South	515	1,140	1,655
Total ..	2,696½	9,103	11,799½

609. **Expenditure.**

	Approved Expenditure	Actual Expenditure
A. *Capital.*	$ 55,828.60	$ 40,848.92
B. *Recurrent:*		
(1) Personal Emoluments	20,696.00	20,336.35
(2) Other Charges ..	102,600.00	69,053.24
C. Contingencies ..	17,875.40	17,480.00
	197,000.00	147,718.51

Amount spent from Contingencies.

A 7 ..	$ 150.00	
A 8 ..	4,200.00	
B 1 (1—7) ..	400.00	
B 2 (iii) ..	12,500.00	
B 2 (v) ..	200.00	
	30.00	Bus fare for plant disease Inspector, C. Bain.
	17,480.00	

610. *Cess.*—The sum of $87,549.97 representing the total cess collected from the sale of bananas during the year was paid into the Treasury as a Suspense Account towards the scheme. This amount plus $10,999.25 collected in 1956, makes a total of $98,549.22.

FISHERIES DIVISION.

(By Claes Grubbe, Fishery Officer).

During the year 1957, both Government Boats were fully overhauled. 'Daisylyn' was delivered to the St. Patrick's Union and Mr. Fred Barriteau was in charge. She was stationed at Isle de Rhonde doing fishing and transportation between Grenada and her berthing. The Assistant Fishery Officer was in charge of the small boat stationed at Victoria where he demonstrated the use of the engine and its benefits to the fishermen in that area. Applications are all ready now awaiting the approval of the Fisheries Advisory Committee.

In the month of April, the icebox at Victoria was handed over to the Union. 'Daisylyn' had to be brought to harbour due to damage done to her engine room apartment as a result of a fire which started on board. Having a new assistant at this stage of the year, office work started in connection with the Loan Scheme. Twenty-four (24) boats have been registreed according to the Loan Ordinance with the following letters—GG for St. George's, GJ for St. John's, GM for St. Mark's, GP for St. Patrick's and GA for St. Andrew's. The government boat 'Daisylyn' having been repaired after her fire, sailed to Carriacou on the 22nd July and was placed in the hands of the Union there.

At the end of August the amount paid out under the Loan Scheme to fishermen totalled $6,278.78. On September 3, boat 'Daisylyn' returned to Grenada and the 20-foot boat was equipped with new sails and despatched to Carriacou for the fishermen there to have a knowledge of the Albin Engine and to see its performance, so that they may be able to make comparisons, and as such arrive at the size and type of boat most suitable for their fishing.

During the month of October the Fishery Officer and his Assistant went to St. Vincent to meet Mr. D. A. Wiles for the purpose of surveying the fishing grounds of the Grenadines. On the 24th the Fishery Assistant went to Carriacou to bring down the Government small boat and had her repaired; the said boat sailed back to Carriacou in a proper working condition on the 30th. During the above-mentioned month $902.64 was paid out under the loan scheme. Four (4) 18-foot boats were completed and brought to St. George's and had their engines installed, and were delivered to their owners on the 22nd December.

The Fisheries Department was visited by Dr. Salmon of United Nations, Rome, Italy, and a representative of the Ocenographic Institute of Massachusetts, to whom we gave statistics of fish landings and rainfall.

For the month of November the sum of $3,842.59 was paid from the Loan Scheme.

During the year 1957, we had quite a few meetings with the Fishermen's Co-operative and Credit Unions and the Registrar of Co-opertives was introduced to the Victoria Union.

The total amount delivered to Fishermen under the Loan Scheme during the year 1957 was $14,613.88.

APPENDIX I.

Statement on Marketing Organization Purchases and Sales, 1957.

Items	Opening Bal.		Purchases		Conversion Production			Sales		Closing Bal.		Spoilage		Shrinkage
	Quantity	Value	Quantity	Value	Quantity	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	
		$		$			$		$		$		$	
All purpose Poultry Feed	1,212	115.14	...	...	...	83,966	7,983.77	83,988	9,237.68	1,190	113.05	...	...	...
Corn	13,028	1,042.20	109,454	8,959.67	13,399	...	...	81,780	8,178.00	27,303	2,184.24	...	...	...
Molasses	...	...	850	85.00	444	...	...	35	7.00	371	37.10	...	...	...
Pig Balancer	...	...	...	...	...	1,190	119.00	1,130	138.60	60	6.00	...	...	...
Fish Meal	1,568	313.60	2,240	450.00	1,513	...	...	2,605	573.10	560	56.00	...	...	...
Crush-Lime	...	...	2,240	35.00	800	...	...	40	80	1,400	21.00	...	...	...
Wheat Shorts	...	..	29,000	2,542.27	22,350	...	...	450	45.00	6,400	576.00	...	...	...
Startena	...	....	12,500	1,451.27	5,960	...	...	2,905	377.65	3,635	472.55	...	...	...
Coconut Meal	5,200	312.00	27,900	1,614.50	27,950	...	..	3,310	199.60	1,840	110.40	...	...	...
Whale and Bone Meal	10,620	1,062.00	...	...	622	..	...	4,000	480.00	6,000	600.00	...	...	...
Cucumber	...	...	588	31.26	...	...	...	549	43.92	...	...	...	...	...
Green Peas	...	...	3,010	301.58	...	...	...	2,935	397.16	288	28.80	25	2.50	...
Avocado Pears	...	...	2,121	79.12	...	...	...	1,911	152.88	...	...	210	8.40	...
Egg Plant	...	...	87	7.19	...	...	...	88	8.32	...	...	...	...	...
Chickens	...	...	150	95.15	...	...	...	150	99.00	....	...	...	...	...
Bluggoes and Bananas	...	...	48,618	1,492.96	...	...	...	47,437	2,371.85	...	...	1,181	34.43	...
Plantain	...	...	19,029	1,307.52	...	...	...	18,949	1,920.86	...	...	380	22.80	...
Charcoal	114	33.72	2,995	586.58	...	...	...	2,133	682.56	66	18.48	...	...	...
Christophene	...	...	1,682	134.56	...	...	...	1,716	205.92	...	...	...	...	...
Yams	565	39.54	20,530	1,518.14	...	...	...	19,754	1,382.78	979	68.49	362	14.48	...
Oranges	...	...	17,198	350.09	...	...	...	16,739	582.96	88	1.76	569	11.38	...
Lettuce	...	...	4,640	225.82	...	...	...	4,269	338.24	...	...	179	5.27	...
Dry Pigeon Peas	...	...	5,824	1,003.04	...	...	...	5,814	1,395.36	...	...	10	2.40	...
Paper Bags	...	...	9,000	122.28	...	...	...	7,335	146.70	300	3.00	...	...	...
Sweet Potatoes	....	...	34,733	1,616.44	...	...	...	33,278	2,354.94	...	...	1,455	87.30	...
Eddoes and Tannias	...	...	14,135	876.77	...	...	...	13,549	1,237.62	...	...	470	28.20	...
Tomatoes	...	...	2,407	654.24	...	...	...	2,370	794.04	...	...	30	6.00	...
Pumpkins	...	...	1,627	59.90	...	...	...	1,282	53.18	348	11.44	11.44	...	...
Grape Fruits	...	...	10,139	241.61	...	...	...	9,979	443.54	47	0.94	1,201	24.02	...
Carrots and Turnips	...	...	2,380	291.53	...	...	...	2,327	349.91	...	...	150	18.00	...
Callaloo	...	...	1,857	80.02	...	...	...	1,893	115.38	...	...	...	...	...
Dasheen	...	...	3,245	187.77	...	...	...	2,963	224.54	...	...	295	14.75	...
Cabbage	...	...	3,401	393.68	...	...	...	3,377	527.78	...	...	150	24.00	...
Beans	...	...	692	82.34	...	...	...	695	108.76	...	...	...	...	...
Pine Apples	...	...	644	49.85	...	...	...	607	64.24	...	...	37	4.44	...
	...	3,898.30	...	29,206.91	...	...	...	...	31,854.87	...	4,360.25	...	308.97	

APPENDIX II

MARKETING ORGANIZATION

FINANCIAL SUMMARY (Trading)

1957

Opening Balance	...	$ 3,898.30	Sales	...	$ 31,854.87
Purchases	...	29,206.91	Closing Balance	...	4,360.25
Profit on Trading	...	3,109.91			
		$ 36,215.12			$ 36,215.12

Loss in shrinkage, spoilage etc. $308.97.

No.	OBSERVATION STATION.	January	February	March	April	May	June	July	August	September	October	November	December	Total	Maximum in one day and date		No. of days on which rain fell
		Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins	Ins.	Ins.	Ins.	Ins.	Ins.	Date.	Ins.	
1	Annandale Station ..	14·20	6·17	2·94	9·55	5·99	9·63	15·13	10·99	7.97	7·98	—	8·73	99·28	Sept. 20th	4·03	211
2	Botanic Gardens ..	7·00	4·87	·99	5·34	2·13	8·55	3·99	8·01	5.52	6·53	14·01	5·18	72·12	Nov. 1st	4·10	230
3	Calivigny Estate ..	5·67	4·11	·38	4·51	1·54	8·33	5·06	5·48	4·25	5·42	12·90	4.70	62·35	Nov. 1st	3·05	168
4	Grand Etang Estate ..	16·3(	10·62	3·32	15·41	10·33	21·26	21·81	22·74	20·09	15·73	16·25	15.41	189·27	Sept. 29th	9·90	306
5	Hope Vale Estate ..	6·56	4·18	·86	4·31	1·81	7·60	6.39	6·67	5·42	5·63	13.85	4.58	67·86	Nov. 21st	2·18	175
6	Mt. Moritz Agricultural Station ..	9·30	5 80	1·56	4·47	3·12	6·35	7·19	12.56	2·02	3·68	15·44	6·51	78·00	Nov. 3rd	3·50	204
7	The Park Estate ..	7·28	5·47	1·37	8·93	4·17	8·99	8·35	9·86	7·23	10·26	11·5(	7·08	90·58	Oct. 20th	3·21	242
8	Westerhall Agricultural Station ..	6·12	2·78	·54	4·49	1·30	8·44	4·72	4.99	4·78	3·67	13·99	4.22	63·04	Nov. 1st	3·92	176
9	Richmond Hill Prison ..	..	..	..	..	2·24	6·13	7·01	7·75	5·42	5·44	12·71	...	46·67	Nov. 2nd	3·15	153
10	Ashenden Cocoa Station ..	8·97	5·68	1·50	9·40	4·75	9·20	9·58	8·61	8·33	6·47	9·57	7·34	89.40	June 29th	3·30	274
11	Les Avocats W.W. ..	11·14	7·43	2·28	12·50	5·58	9·42	11.48	9·14	9·97	6·47	13·96	8·57	107·94	Sept. 21st	3·90	266
12	La Sagesse Estate ..	..	..	·83	5·82	1·91	6 86	6·03	5.37	5·11	3·35	12·5(	4·22	52.10	Nov. 2nd	2·57	124
13	Baillies Bacolet Estate ...	6·44	5·03	1·00	4.65	1·91	8·56	6·25	5.52	4·64	4·94	14·1(	5·38	68·42	Nov. 1st	3·10	226
14	Pomme Rose W. W. ...	7·38	2·90	·88	9·16	3·87	6·09	9.15	6.97	5.86	5·05	9·07	5·28	71·66	Nov. 2nd	3·25	214
15	Boulogne Nurseries ..	5·56	4·53	1·36	6·34	2·43	6.36	7·82	6.15	4·21	7·90	8·98	3·77	65·41	June 29th	2·36	226
16	Carriere Estate ..	3·75	2· 9	..	5·36	2·73	..	5·78	4·10	2·26	7·35	8.85	3·92	33·24	Oct. 31st	2·29	93
17	Dunfermline Estate ..	3·96	4·12	·75	6·78	1·55	6·84	..	5·37	3·65	5·56	9.69	1·93	50·20	June 29th	3·29	87
18	Grand Bacolet Estate ..	7·79	5·36	·89	9·27	4·28	9·52	9·45	9·17	5·07	7·27	10.04	6·00	84·11	June 30th	3·76	262
19	Hope Estate ..	4·93	4·06	..	8·00	2·59	6·98	6·77	6·55	..	5·58	5.86	4·16	55·48	April 26th	3·24	131
20	Mt. Horne Cocoa Station ..	6·13	5·27	1·82	8·19	4·74	8·86	..	6·87	6·01	8·31	9.63	5·02	70·82	30th June	3·55	182
21	Niaganfoix Estate ..	8·60	6·32	2·23	12·60	5·71	9·99	10·45	12.19	10·08	12·88	11·79	6.65	109·29	April 29th } July 7th } Sept. 20th }	3·50	213
22	Tivoli Agricultural Station ..	3·97	3·23	·36	4·78	2·35	4·96	6.58	7·04	6·89	6·67	7·4(	4·9(	59·19	June 29th	2·92	140
23	Richmond Estate ..	6·54	6·17	...	..	..	...	..	..	••	7·60	11·43	3·33	35·07	Feb. 25th	3·40	72
24	Blair Athol Estate ..	4·42	3·85	·77	4·77	2·02	6·28	9.17	7.06	8·17	6·45	6.9(	6·04	66·58	July 8th	2·95	200
25	Lower Marli Estate ..	2·79	2·54	1·06	4·28	2·64	5·49	7·63	6.85	8·11	5·79	9·42	4·48	61·05	Nov. 3rd	2·16	183
26	Upper Marli Estate ..	4·30	3·62	1·27	5·83	2·84	6·63	9·31	7·79	8·94	6·44	8·49	6·36	72·10	June 29th	2·20	261
27	Samaritan Estate ..	4·71	3·99	1·48	5·27	2·53	6·79	9.51	7·95	9·25	6·96	10·14	7·59	68·60	Nov. 3rd	3·39	247
28	St. Leonard's Estate ...	..	...	...	..	..	..	..	..	..	5·30	5·77	4·14	15·21	Oct. 31st	2·80	19
29	Crayfish Estate ..	4·95	3·69	1·11	4·94	2·86	7·35	10·44	7·44	8·97	5·15	8·96	5.85	71·72	Sept. 20th	2·50	245
30	Belvedere Estate ..	12·28	8·10	3·32	13·94	6·36	10.50	13·85	15.31	16·81	11·66	12·38	11·92	124·51	Sept. 20th	7·00	136
31	Brcthers Estate ..	11·92	8·59	3·03	6 90	3·94	8·87	12·44	13·94	13·75	6·99	12·1(	...	102·56	Sept. 20th	4·80	248
32	Dougaldston Estate ..	11·23	6·43	2·02	6·72	3·34	9·09	12·69	14·44	13·37	6·41	11·16	6·84	103·74	Sept. 20th	4·56	230
33	Maran Cocoa Station ..	10·35	5·37	2·32	6·48	3·66	7·69	11.76	13.15	10·31	6·60	12·6(	6·34	96·72	Sept. 20th	3·86	274
34	Mt. Felix Estate ..	13·58	9·11	3 31	11·41	4·73	12·10	14·32	14·64	21·25	13·38	16·1(	15·63	149·59	Sept. 21st	5·50	215
35	Belair Park ..	..	..	...	..	1·55	4.94	5·00	5·05	4·60	4·48	7·3(	3.31	36·23	Sept. 20th	2·60	78
36	Limlair Agricultural Station ..	12·03	·86	·30	4·10	·89	4·47	5·11	4.62	4·47	3·20	5·0(	1.45	41·55	Sept. 21st	1·60	100
37	Dumfries Estate ..	5·3(	1·48	·17	3·90	1·55	5·71	5,92	4.99	3·14	·75	5·74	4·62	43·30	Dec. 12th	2·61	78
38	Calliste Estate ..	2·18	3·00	·55	2·61	1.03	3·80	4·45	4·45	3·44	2·94	8·38	2·64	39.47	Nov. 4th	1·75	219
39	Hillsborough ...	4·63	2·73	·10	4·44	2·51	4·87	3·85	4·78	4·60	3·60	..	..	36.11	Sept. 21st	2.06	90
40	Balthazar Estate ...	...	...	·29	10·70	3·52	7·75	7.39	6·65	5·69	10·63	10·00	5·26	67·88	April 24th	3.50	124